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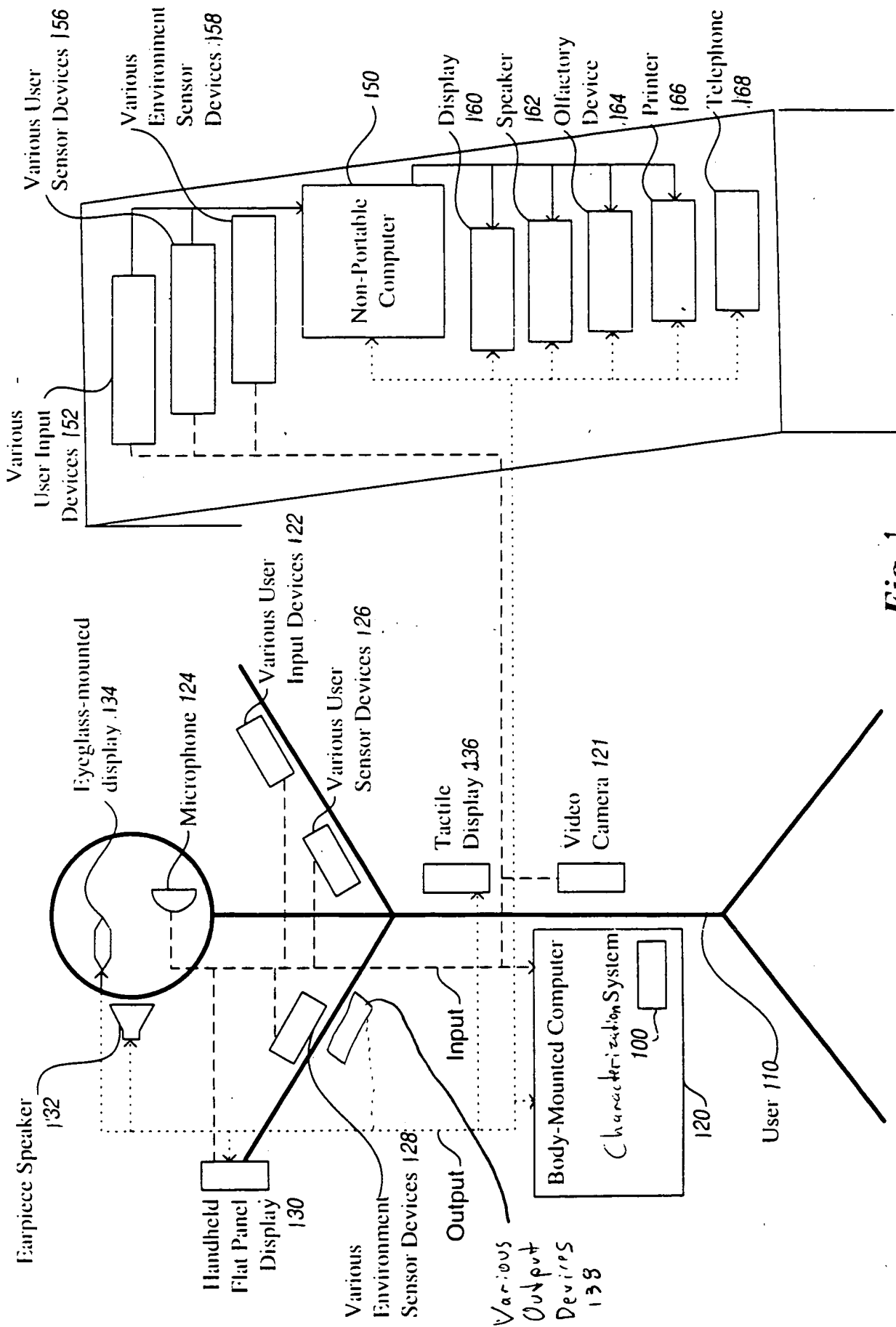


Fig. 1

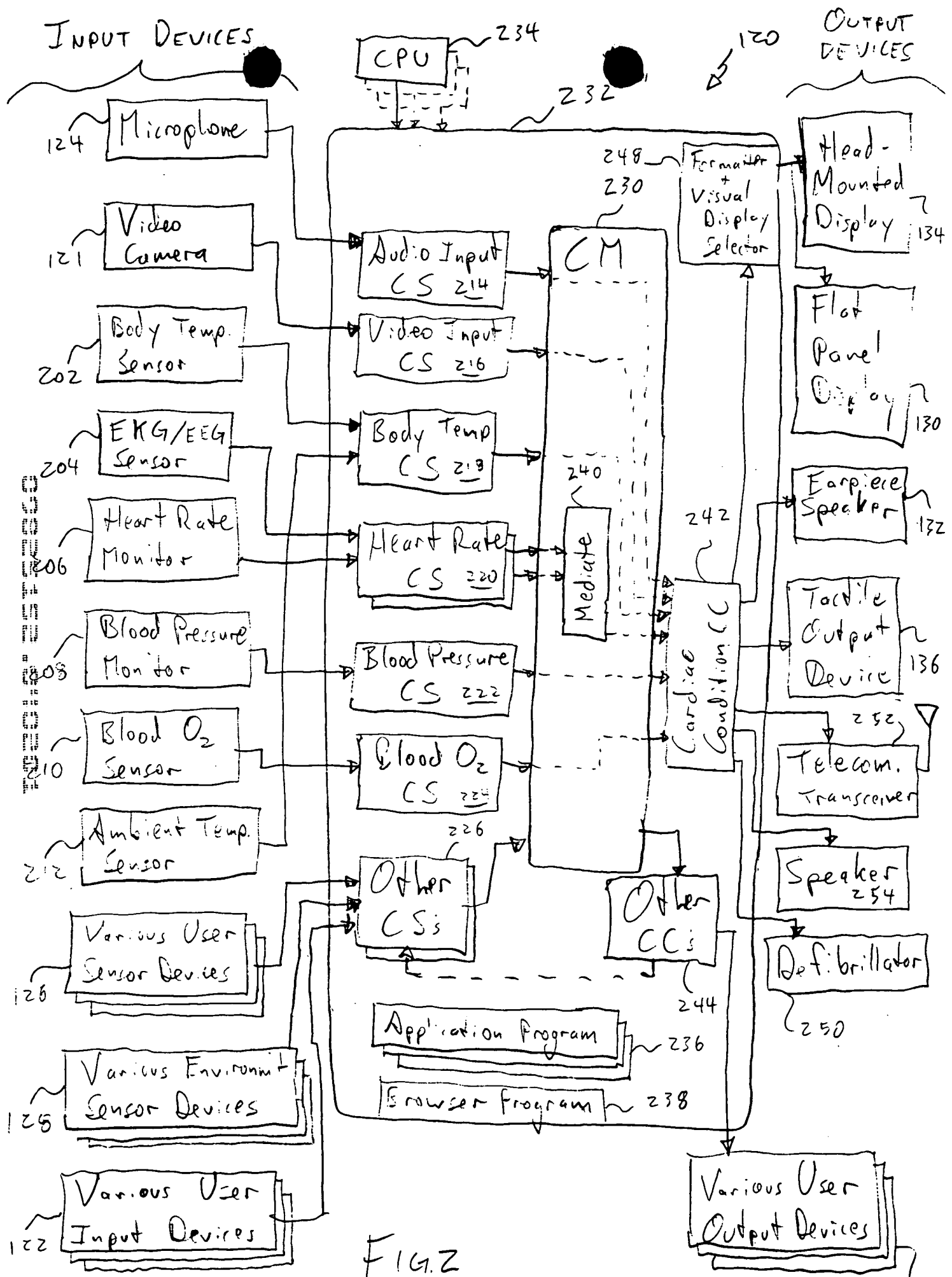


FIG. 2

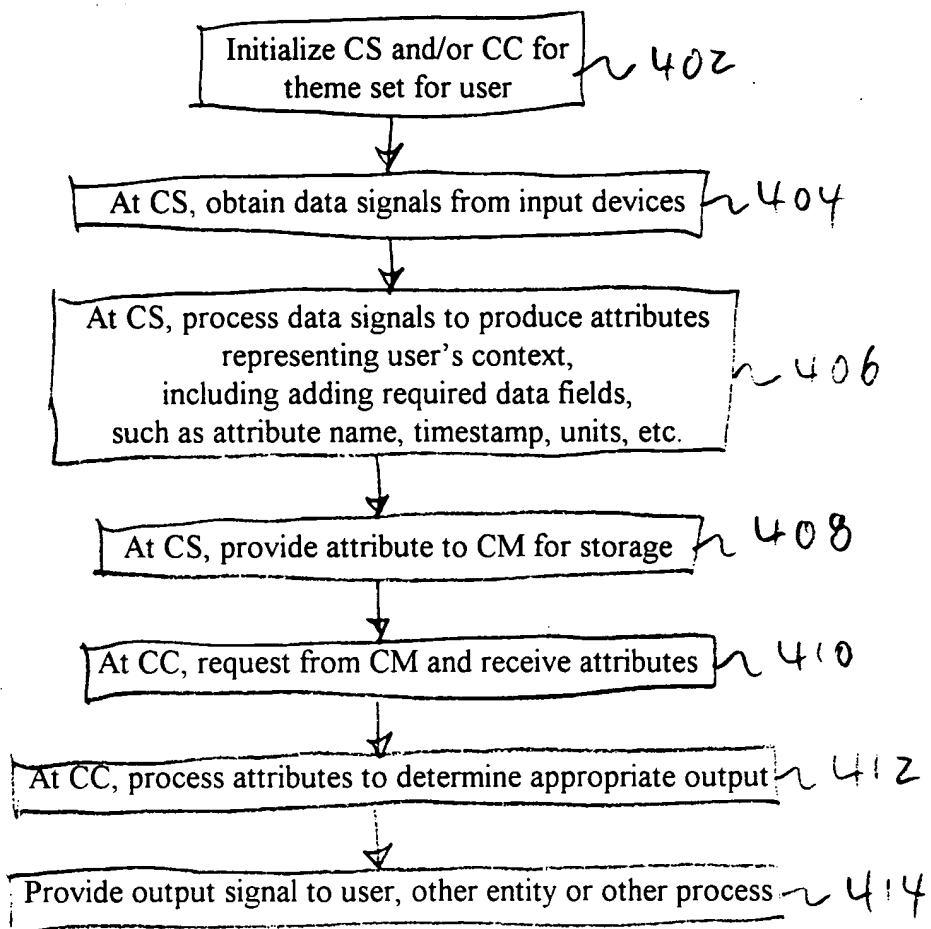


FIG 4

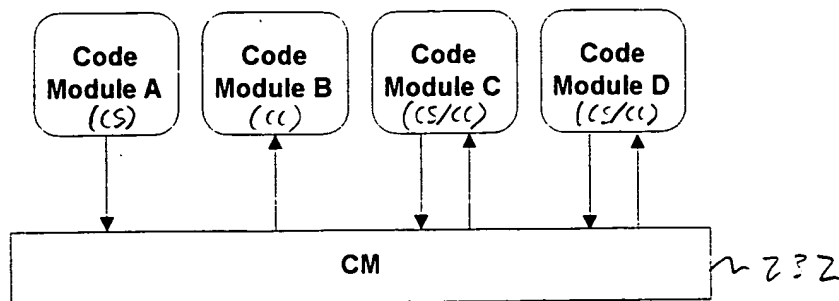
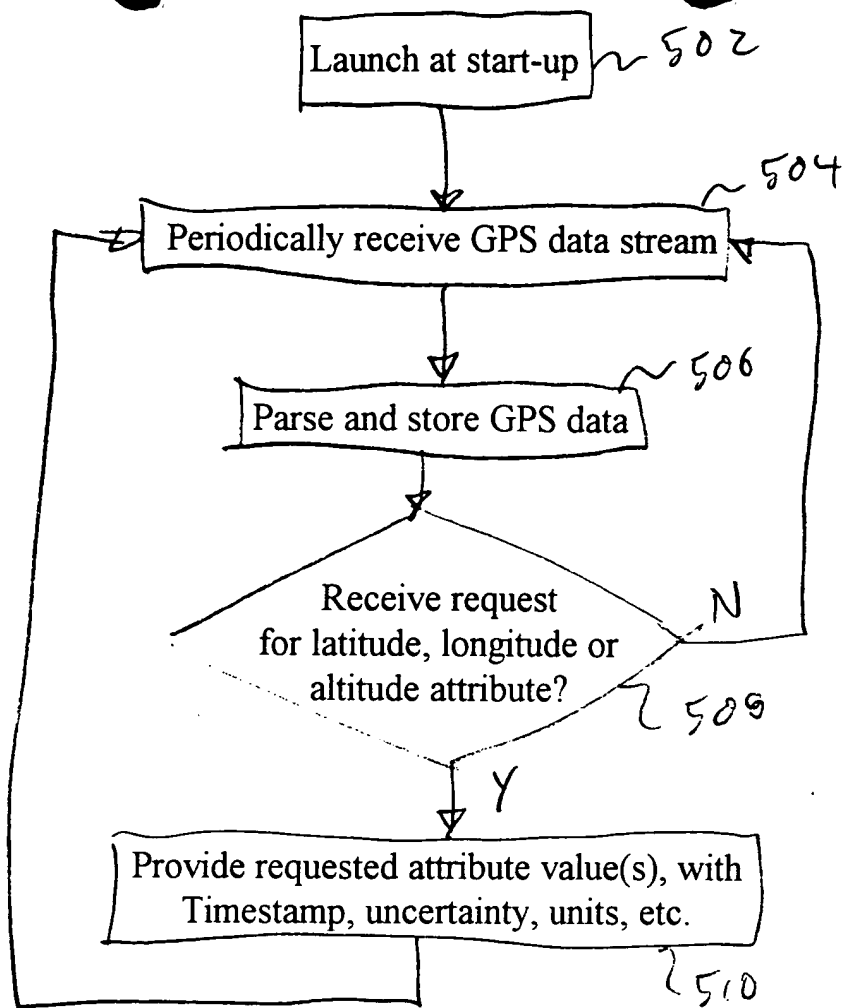


FIG 3



500

FIG 5A

Name	521
Latitude (Value)	522
Uncertainty	524
Timestamp	526
Units	528
Format Version/Flags	530

520

FIG 5B

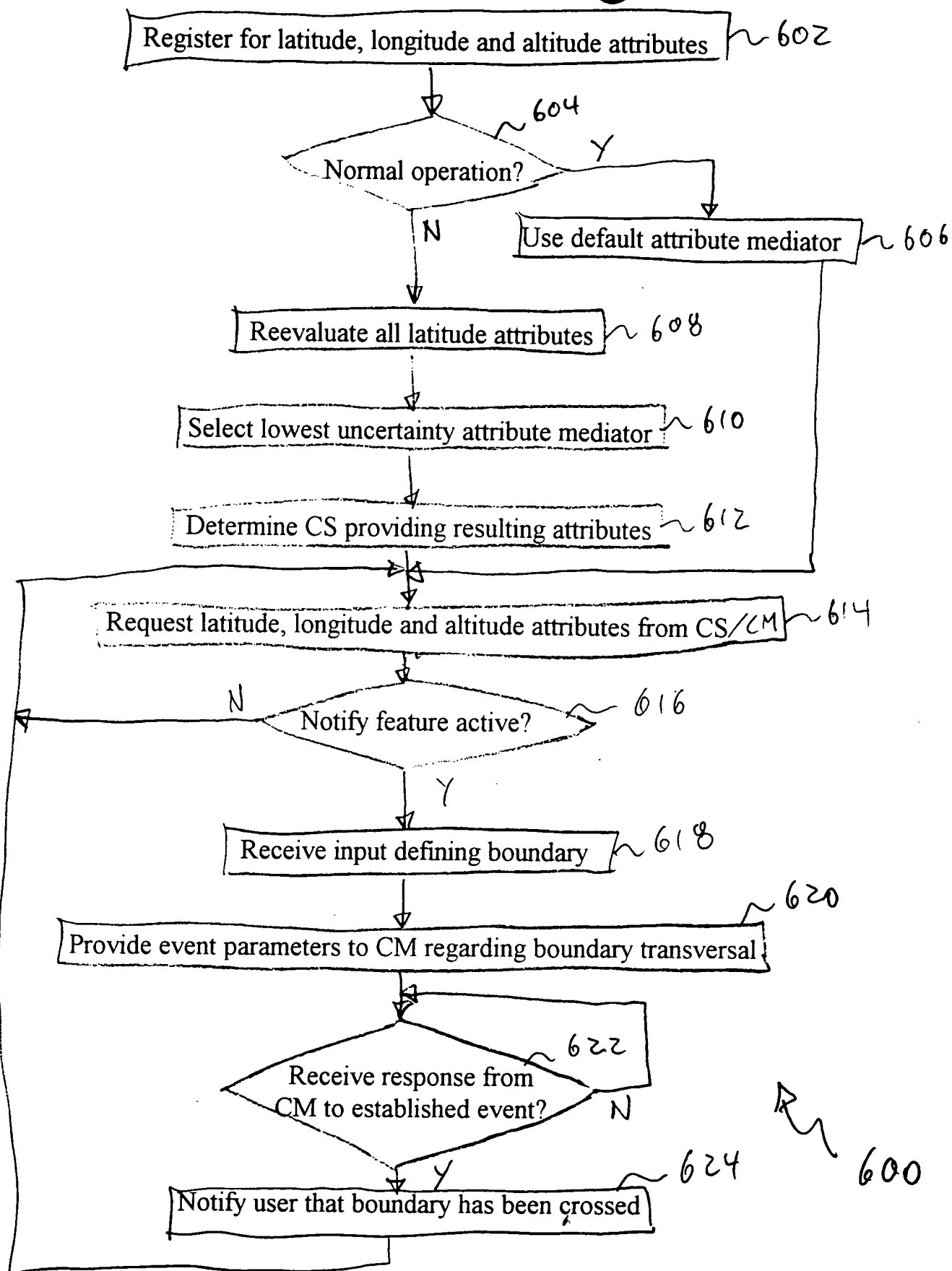


FIG 6

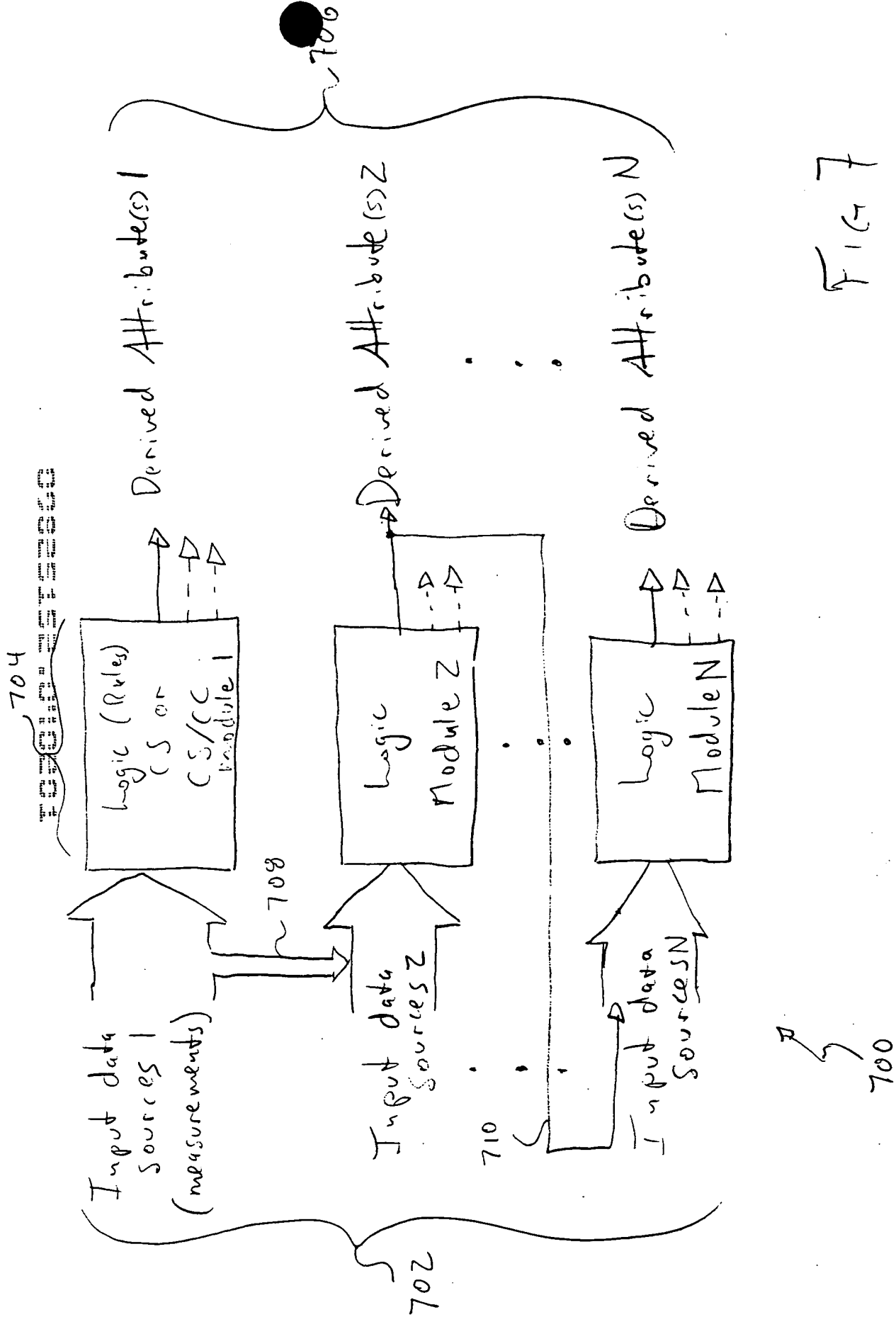


FIG 7

User.

Desired_privacy_level
 Interruptibility
 Speed
 Direction
 Acceleration
 Availability.
 Cognitive_availability
 Tactile_availability
 Manual_availability
 Visual_availability
 Oral_availability
 Auditory_availability
 Proximity.<Item or place name>
 Mood.

Happiness
 Sadness
 Anger
 Frustration
 Confusion

Activity.

Driving
 Eating
 Running
 Sleeping
 Talking
 Typing
 Walking

Location.

Place_name
 Latitude
 Longitude
 Altitude
 Room
 Floor
 Building
 Address
 Street
 City
 County
 State
 Country
 Postal_Code

Destination. (same as User.Location.)

Physiology.

Pulse
 Body_temperature
 Blood_pressure
 Respiration

Person.<name or ID>. (same as User.)

Platform.**UI.**

Oral_input_device_availability
 Manual_input_device_availability
 Tactile_output_device_availability
 Visual_output_device_availability
 Auditory_output_device_availability

Platform. (continued)**CPU.**

Load
 Speed

Memory.

Total_capacity
 Used

Storage.

Total_capacity
 Used

Connectivity.

Connection_status
 Connection_speed
 Connection_type/device
 Connection_activity

Power.

Power_source
 Power_level

Environment.**People.**

Nearest
 Number_present
 Number_close

Local.

Time
 Date
 Temperature
 Pressure
 Wind_speed
 Wind_direction
 Absolute_humidity
 High_forecast_temperature
 Low_forecast_temperature
 People_present
 Ambient_noise_level
 Ambient_light_level
 Days.<previous or future>.
 High_temperature
 Low_temperature
 Precipitation_type
 Precipitation_amount

Place.<place name>. (same as Environment.Local)

Application.**Mail.**

Available
 New_messages_waiting
 Messages_waiting_to_be_sent

Phone.

Available
 In_use
 On/off
 Notification_mechanism
 Call_incoming
 Caller_ID

Sound_recorder.

Available
 Recording

User Setting

Mental Context

Meaning

Cognition

Divided User Attention

Task Switching

Background Awareness

Solitude

Privacy

Desired Privacy

Perceived Privacy

Social Context

Affect

Physical Situation

Body

Biometrics

Posture

Motion

Physical Encumbrment

Senses

Eyes

Ears

Tactile

Hands

Nose

Tongue

Workload demands/effects

Interaction with computer devices

Interaction with people

Physical Health

Environment

Time/Space

Objects

Persons

Audience/Privacy Availability

Scope of Disclosure

Hardware affinity for privacy

Privacy Indicator for User

Privacy Indicator for Public

Watching Indicator

Being Observed Indicator

Ambient Interference

Visual

Audio

Tactile

Computer

Power

Configuration

User Input Systems

Hand/Haptic

Keyboard/Keystrokes

Voice/Audio

Eye Tracking

Cursors

Axis

Resolution

Selection

Invocation

Accelerators

Output Systems

Visual

Resolution

Audio

Public/Private

Haptic

External Resources

I/O devices

Connectivity

Data

Quantity/State

Urgency/Importance

Use of Prominence

Modality

Sensitivity/Purpose

Privacy Issues

Use of Association

Use of Safety

Source/Ownership

Types

User generated

Other computers or people

Sensor

PC State

Use of Association

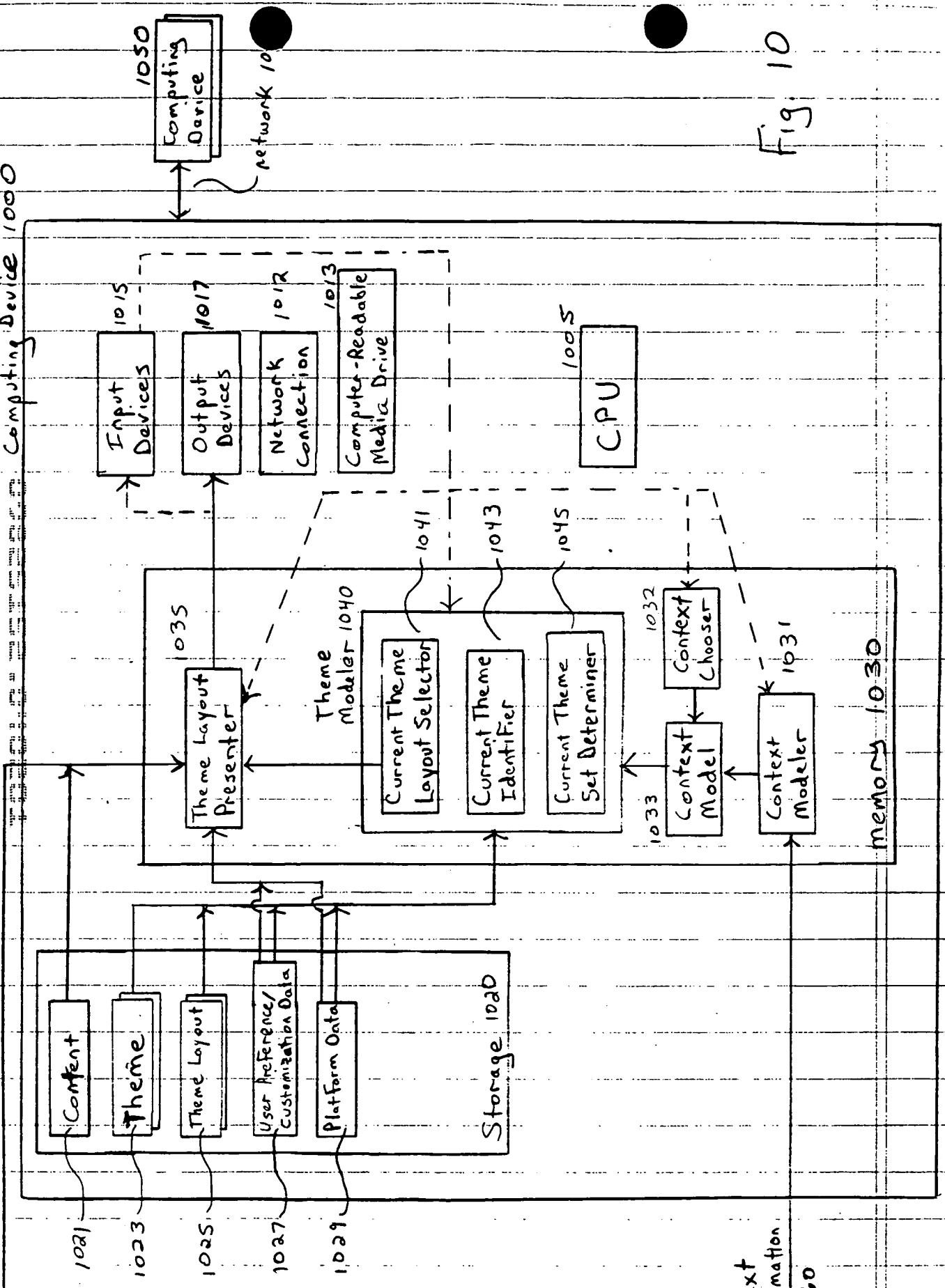
Fig 9

Various Content 1070

Thematic Response Computing Device 1000

Context Information 1060

Fig. 10



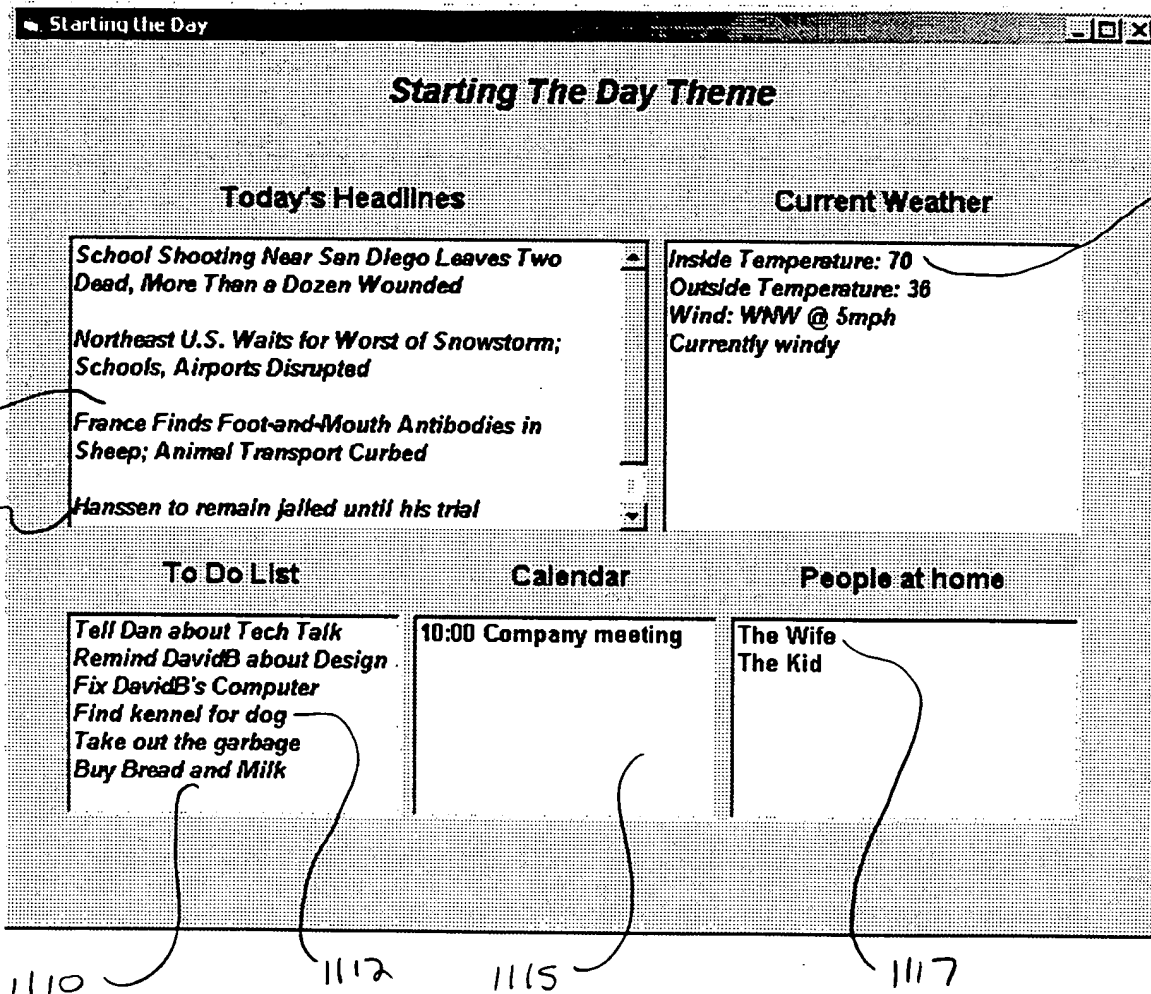


Fig. 11A

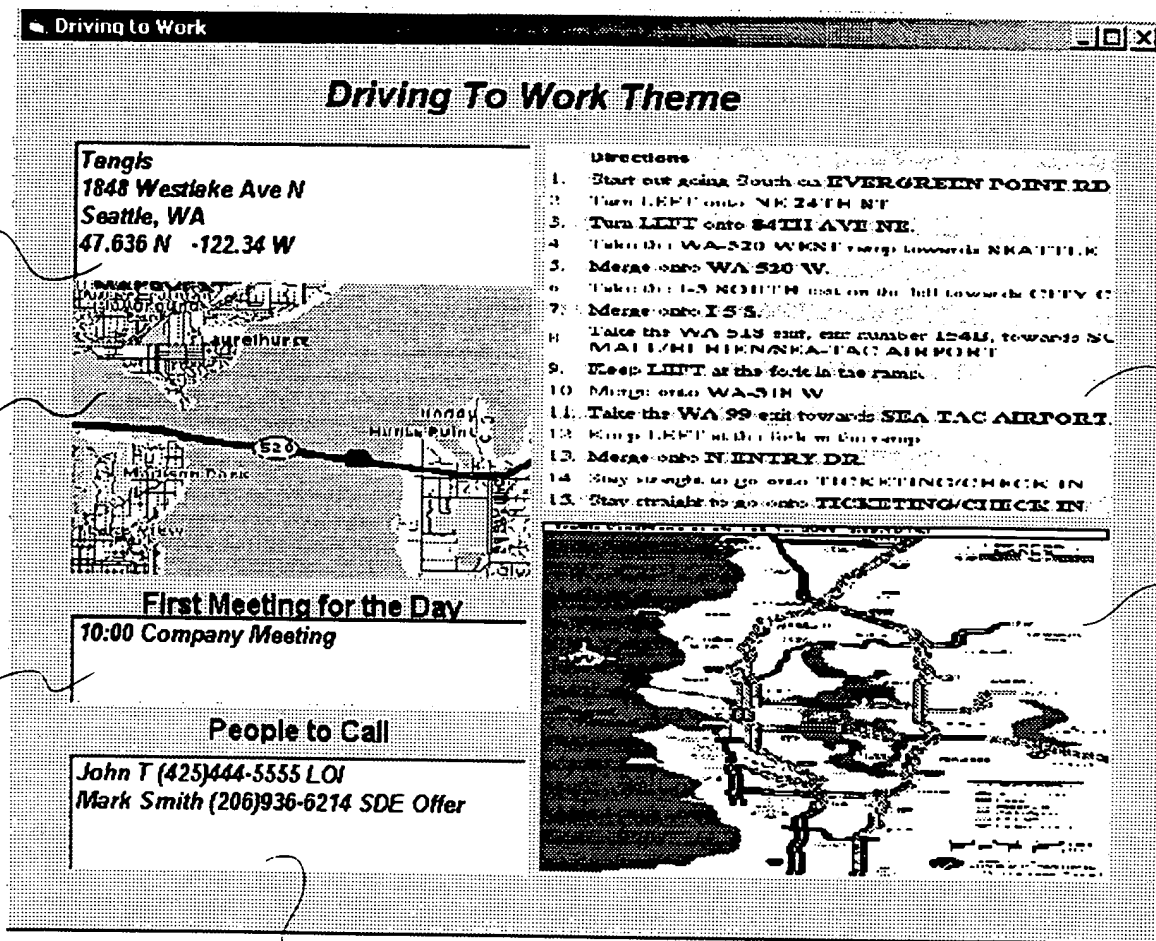


Fig. 11B

Arriving At Work

Arriving at Work Theme

Pe ple in the Building	To Do List
Ancel Johnson	Tell Dan about Tech Talk Remind DavidB about Design spec deadline. Fix DavidB's Computer Call Mark Smith (206)936-6214 about Job Offer

Tangis Bulletin Board

- 1 Weekly Company meeting at 10:00pm
- 2 VIA demo at 3:00pm Penthouse. Everyone invited.
- 3 Who let my dog out?[Dan]
- 4 Extra ticket to Sonics/Lakers game tonight[Josh]
- 5 Who used decaf on the non decaf container?!?[Alan]

Fig. 11C

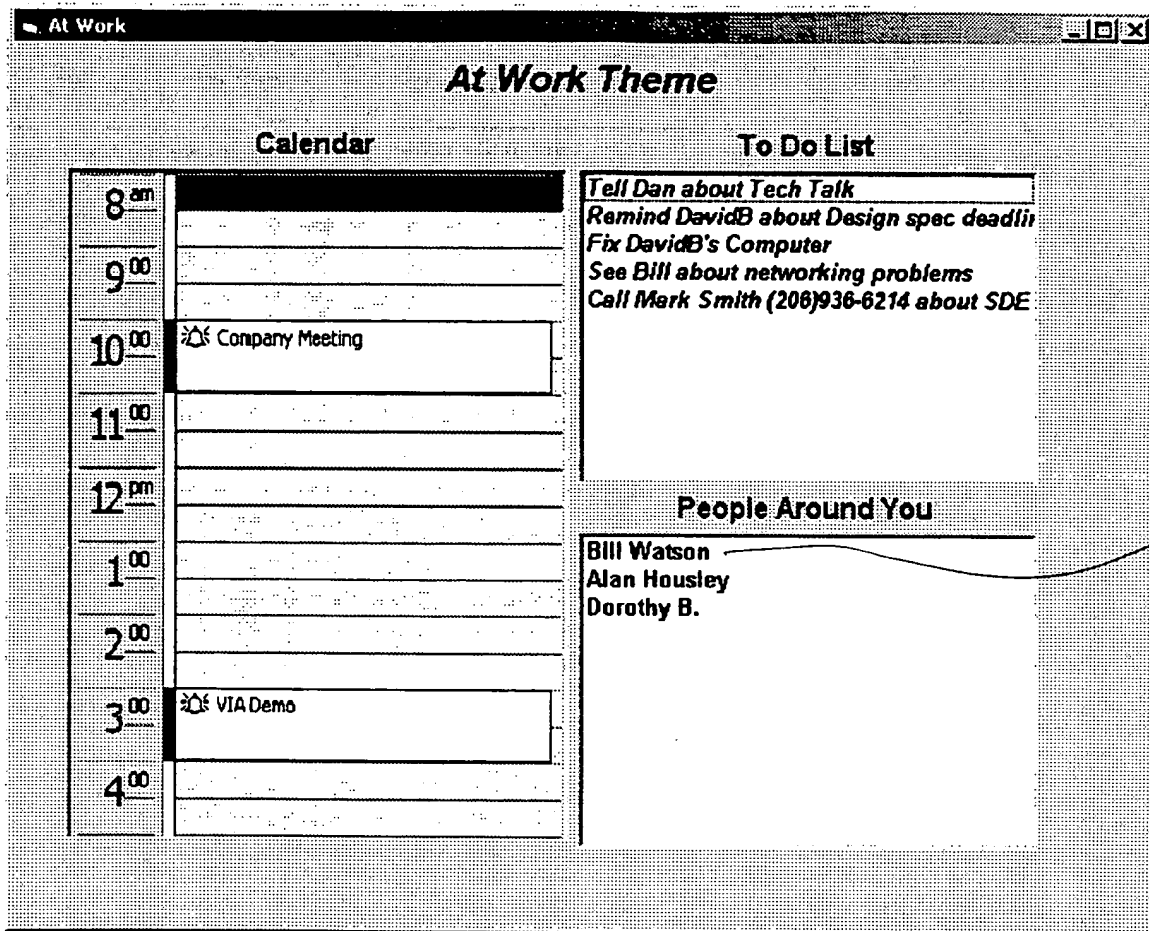


Fig. 11D

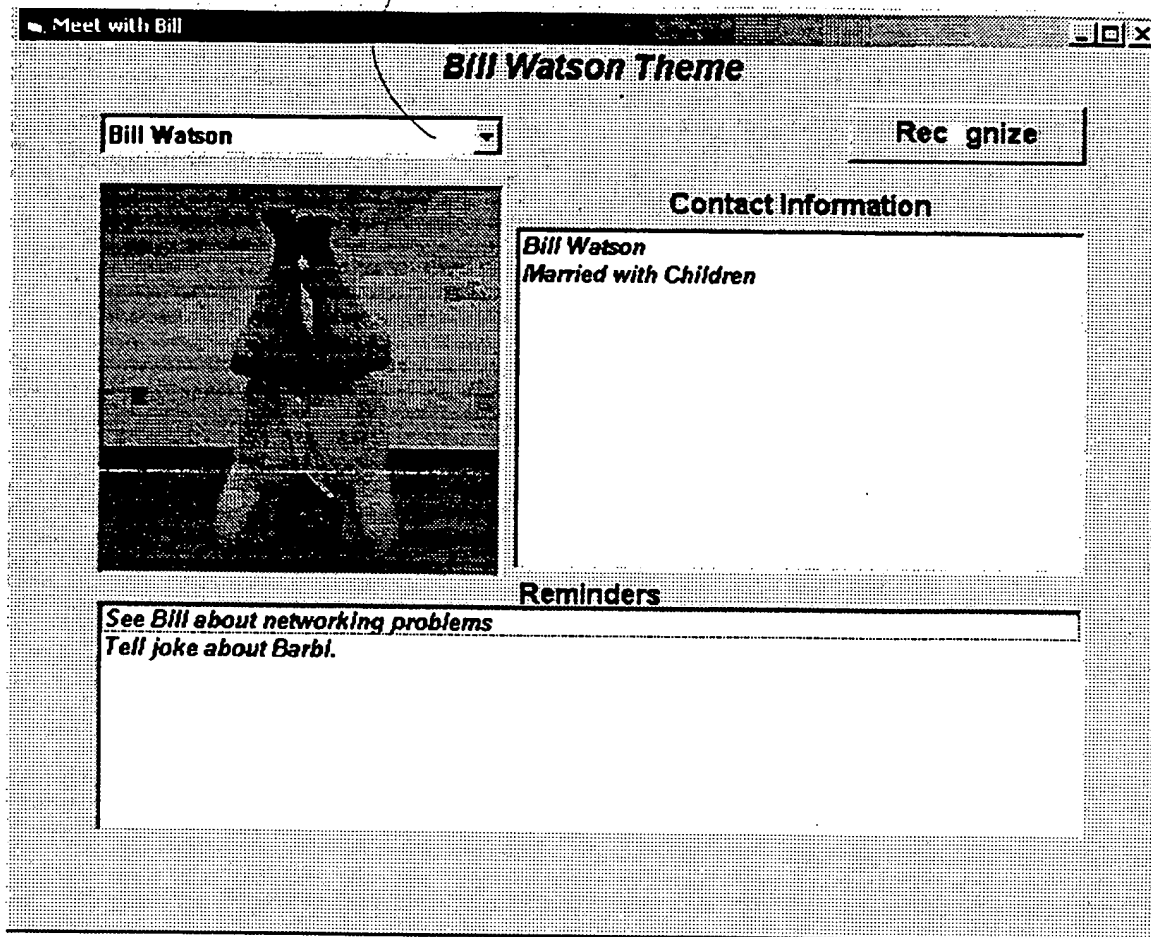


Fig. 11E

Company Meeting

Meeting Theme

Things to bring up

Tell group what you did last week

Tell group what you plan to do this week

Tell group about your new invention.

Tell group about your upcoming skiing trip.

Kudos for Stan and Dorothy for finishing report

Notes

Finished coding Turing Machine on Monday.

Did bug bash on Tuesday.

Survived an earthquake on Wednesday.

Worked on CTK demo rest of last week

Continuing work on CTK demo rest of this week

People Present

Aaron Graves

Alan Housley

Ancel Johnson

Bill Watson

Brian Rose

Cesar Alvarez

Dan Newell

David Jukes

Dorothy B.

Jaquie T.

Jeff Fried

Jim Roberts

Johnson A.

Josh Freedman

Kanisha Patel

Ken Abott

Lisa Davis

Molly Fitch

Scott Price

Stan Emert

Fig. 11F

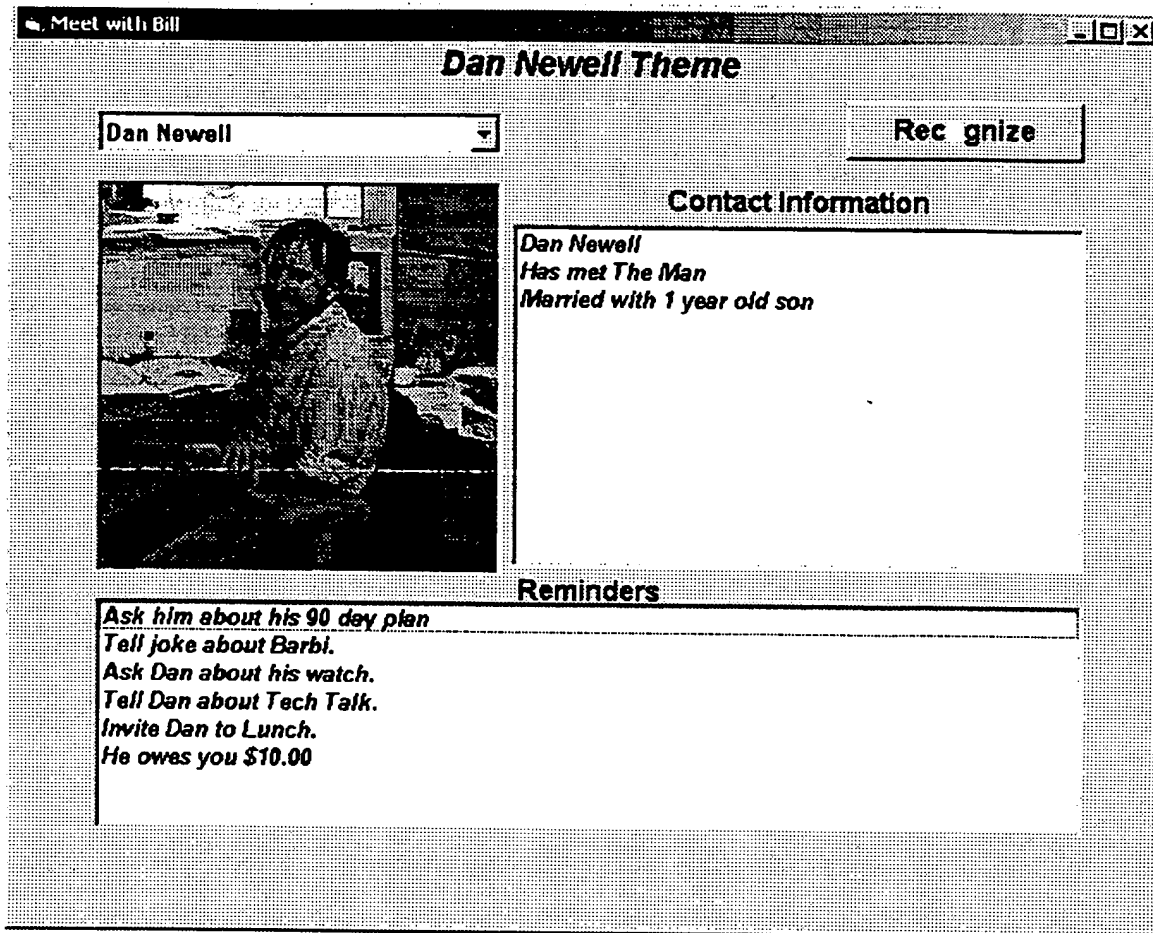


Fig. 11G

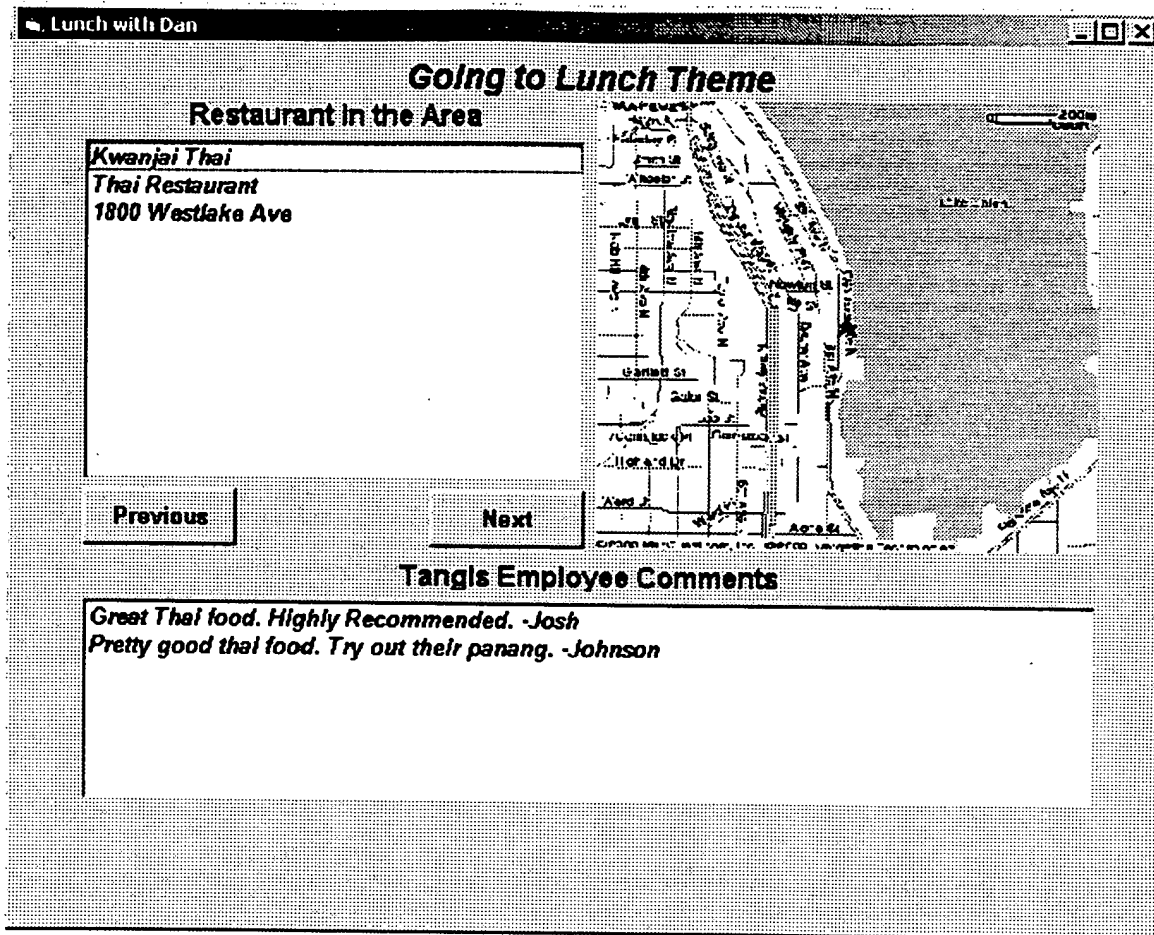


Fig. 11H

Repairing a PC

Repairing a PC Theme

Computer Equipment **Josh's Computer**

Description	Notes
Description Dell XPS 4000 Purchase Date: 11/20/2000 Tangis Tag: PC001	Notes Currently inoperative Josh noticed a loud noise coming from the hard disk. He said it might be a problem with the disk's brake pads. If he mentions this again, humor him.
Software Installed Office 2000 Visual Studios 6.0 MS Entertainment Pack Boeing Marketing Tutorial: How to talk like a techie	
Hardware Installed Creative Sound Blaster 10.0 card Ricoh 32X CDRW MS USB Microphone Intel TR1688 100Mbps Token Ring	

Fig. 11 I

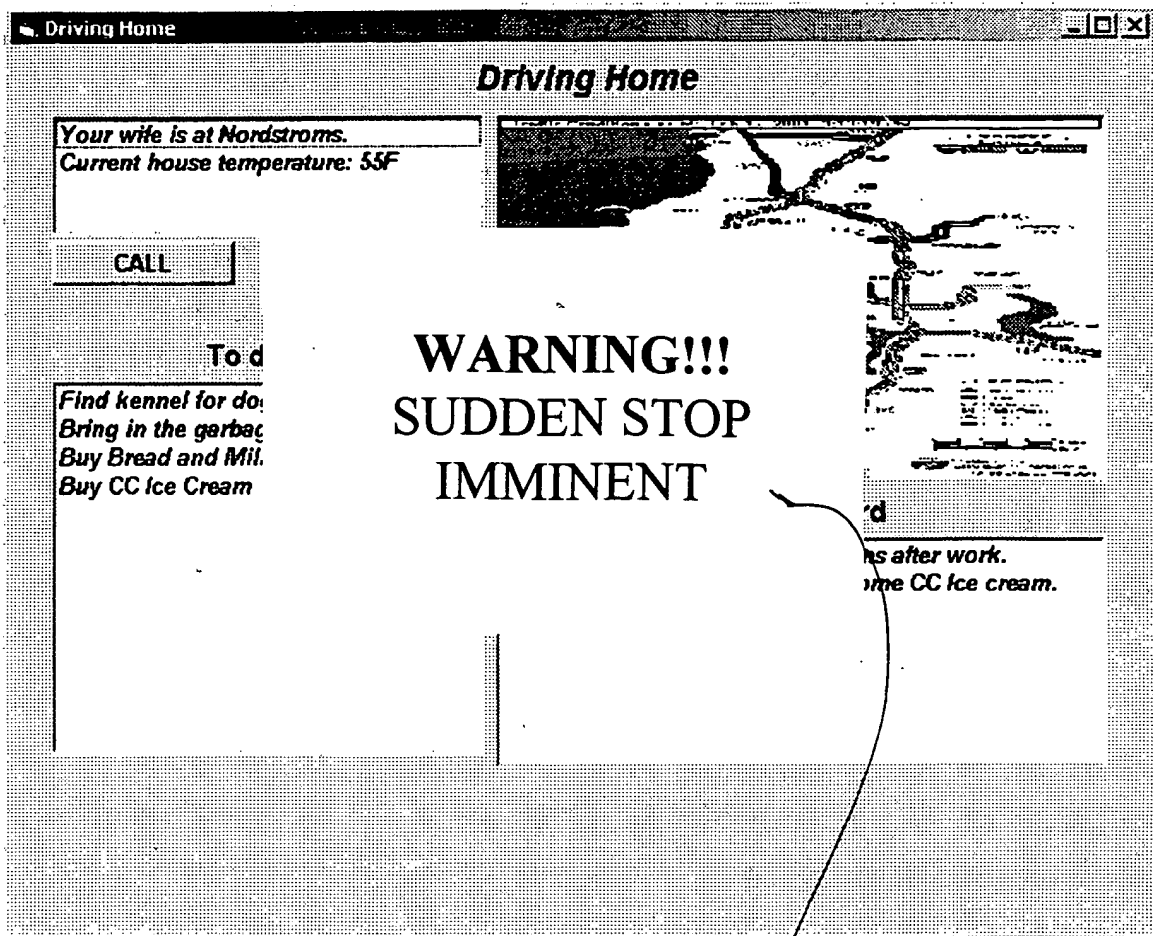


Fig. 11K

1190

Arriving Home	
<p>To do list</p> <p>Find kennel for dog. Bring in the garbage. Help Junior with Homework.</p>	<p>What's on TV</p> <p>07:00 Komo TV Local News (4) 07:30 Wall Street Week (9) 08:00 Survivor III (7) 09:00 X-Files (13) 10:00 Big Apple (7)</p>
<p>Family Board</p> <p>[Spouse]3:48 I am going to Nordstroms after work. [Son]4:40 Dad, Can you buy me some CC ice cream. [Spouse]5:15 I'll be home at around 6:30. Get dinner. [You]5:15 Sure Son. [You]6:00 I'm home.</p>	<p>People At Home</p> <p>The Wife The Kid</p>

Fig. 11L

Example Current Theme Selection

Select A New Current Theme

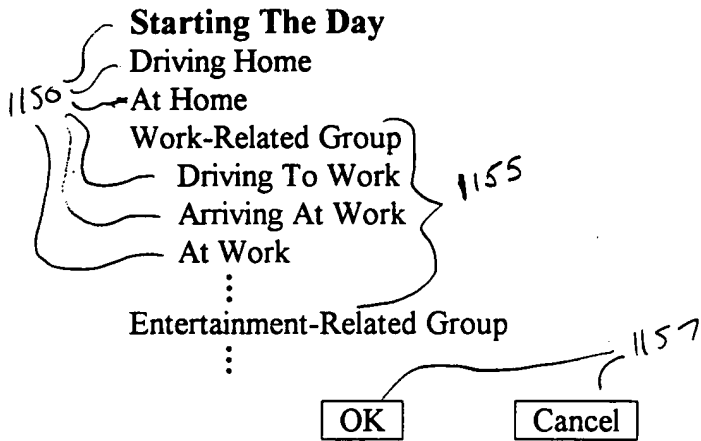


Figure 11M

Example Current Theme Set Modification

Current Theme Set

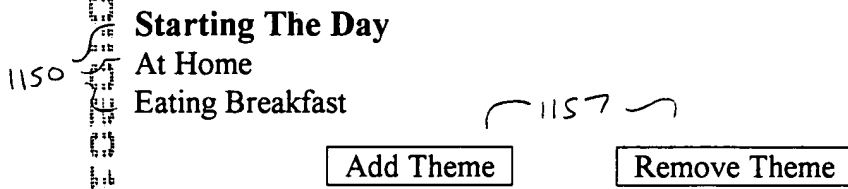


Figure 11N

Example Current Theme Layout Selection

Select A New Current Theme Layout

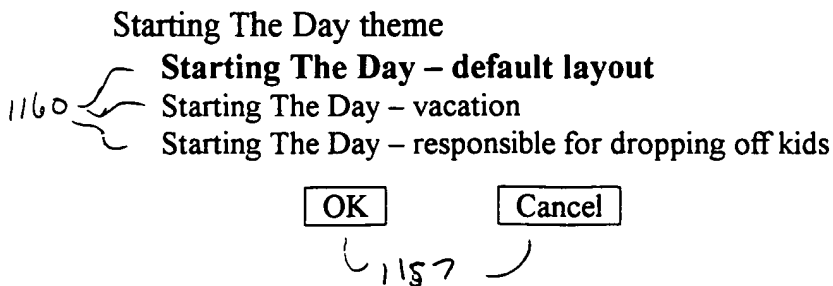


Figure 11O

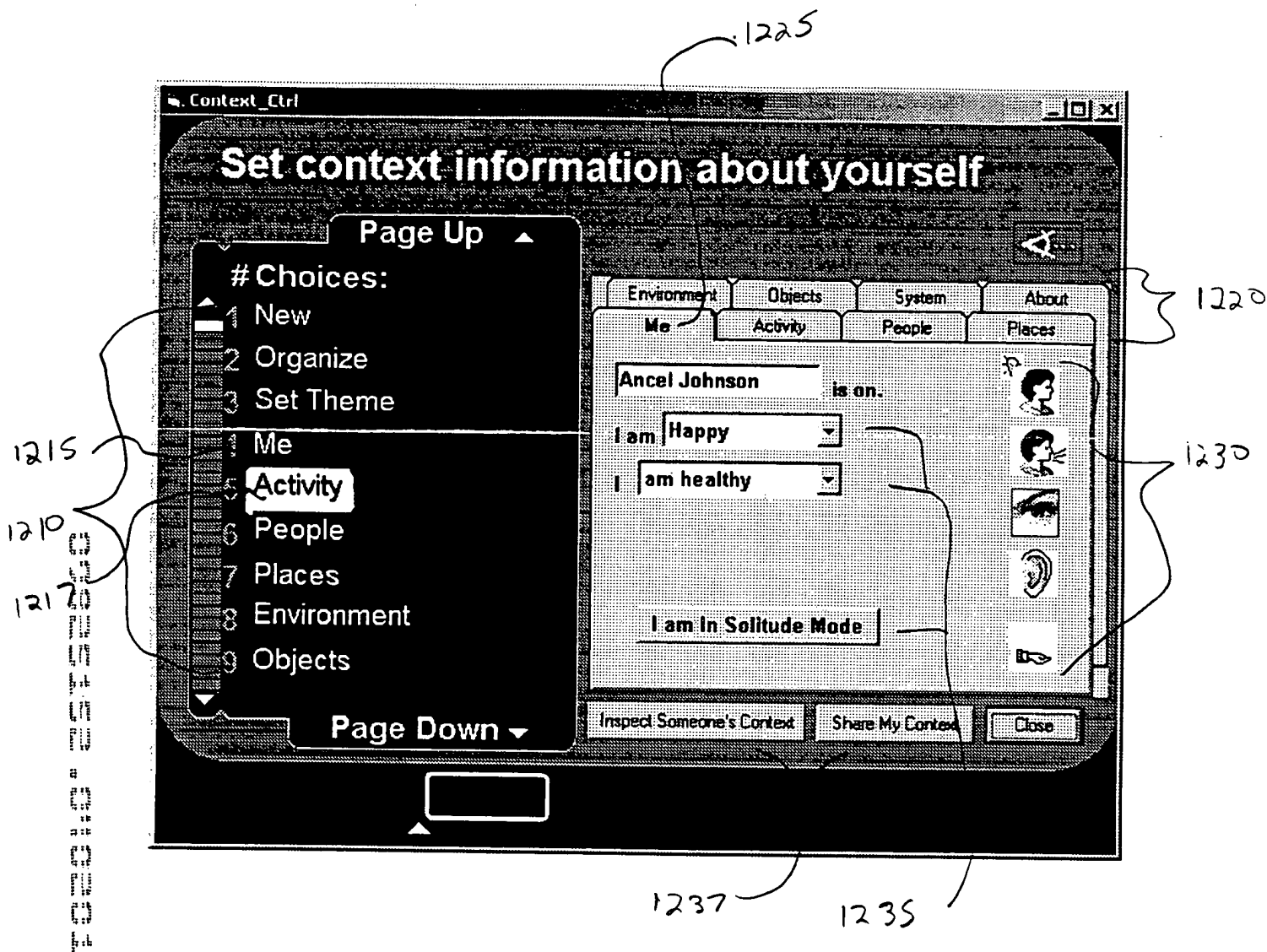


Fig. 12A

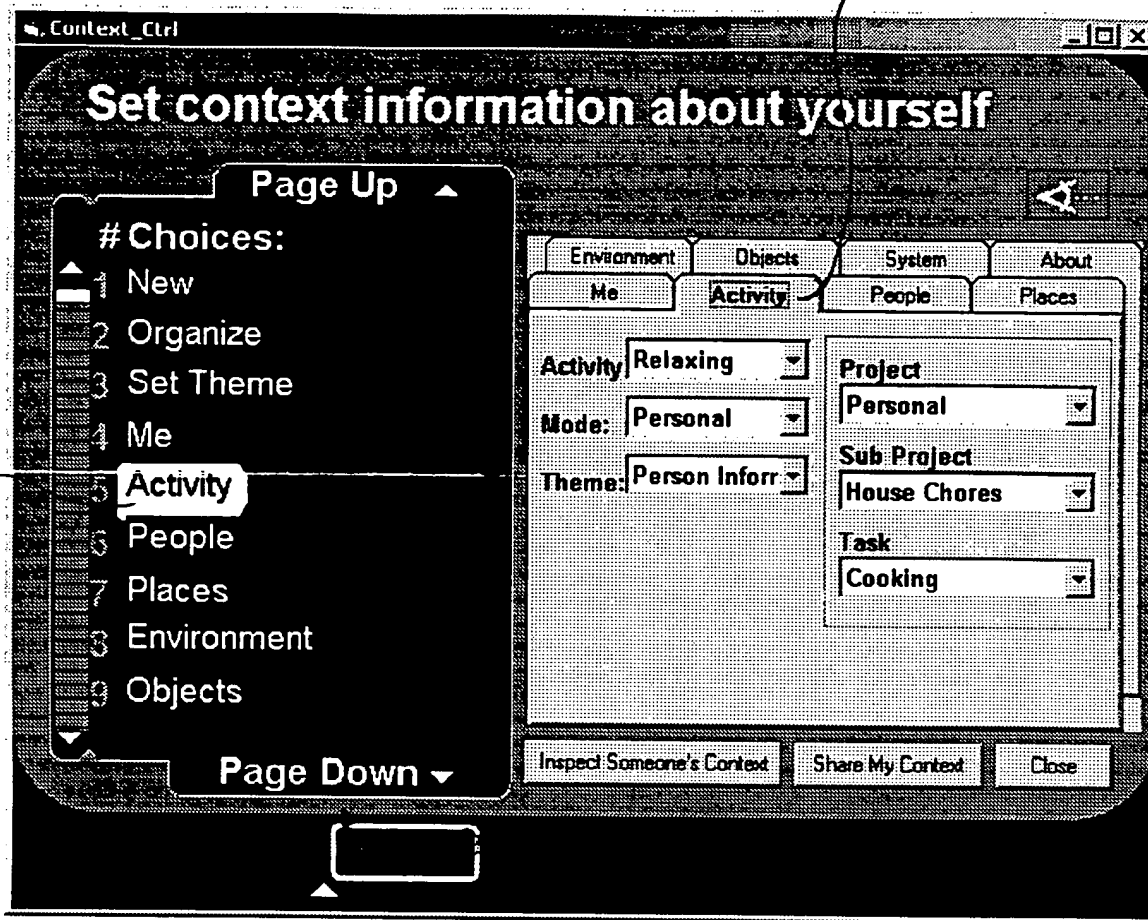


Fig. 12B

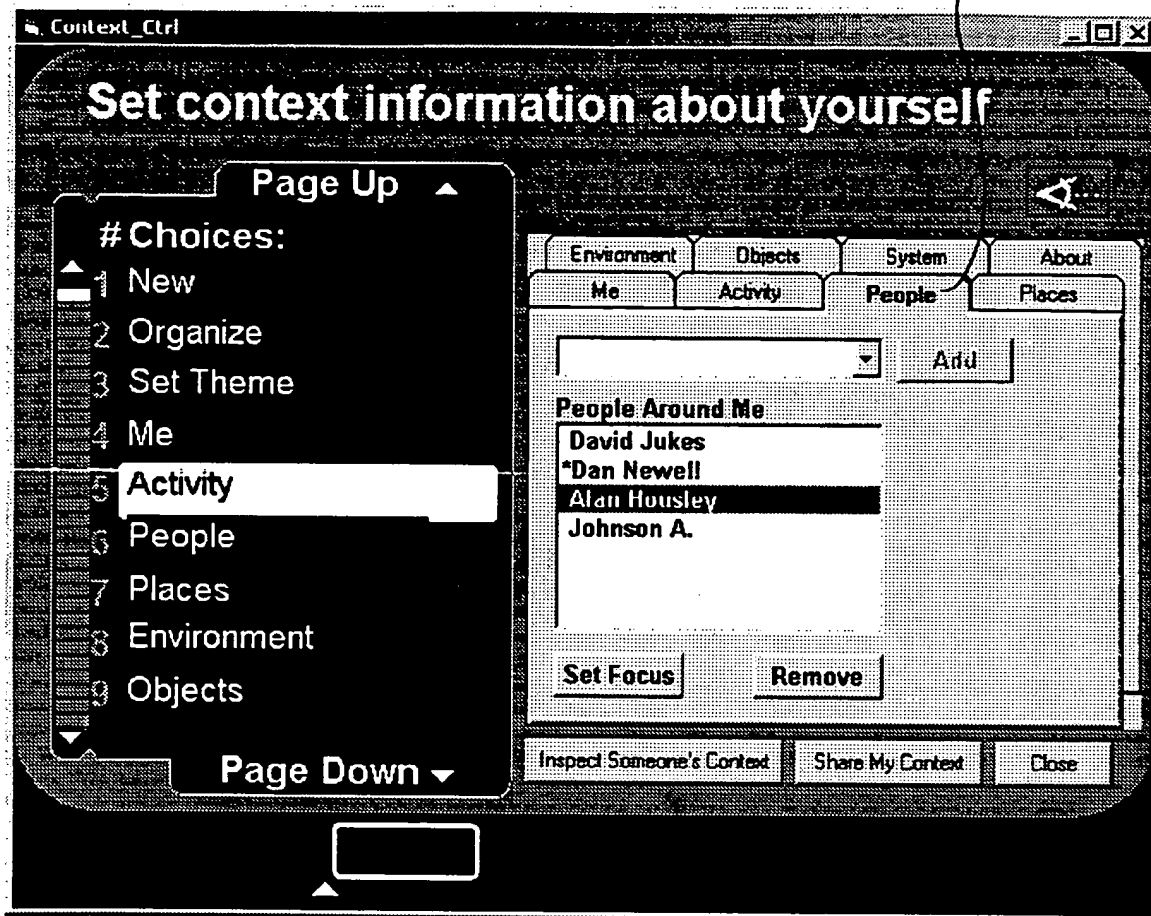


Fig. 12C

Context Ctrl

Set context information about yourself

Page Up ▲

Choices:

- 1 New
- 2 Organize
- 3 Set Theme
- 4 Me
- 5 Activity
- 6 People
- 7 Places
- 8 Environment
- 9 Objects

Page Down ▼

Environment Objects System About

Me Activity People Places

Location Jim's office

LAT 47.636 N LONG -122.34 W

room
1848 Westlake Ave N
Seattle, WA

Destination Tangis

Inspect Someone's Context Share My Context Close

1242

Fig. 12D

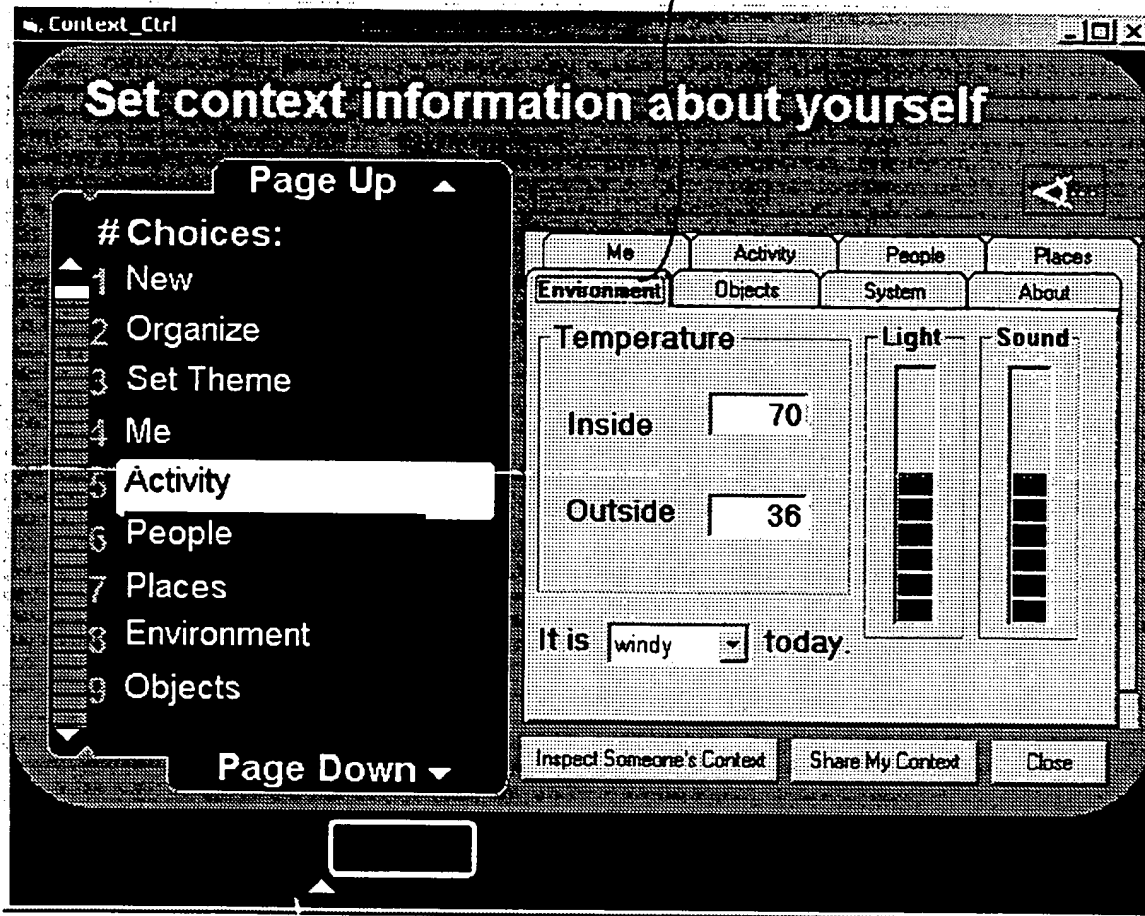


Fig. 12E

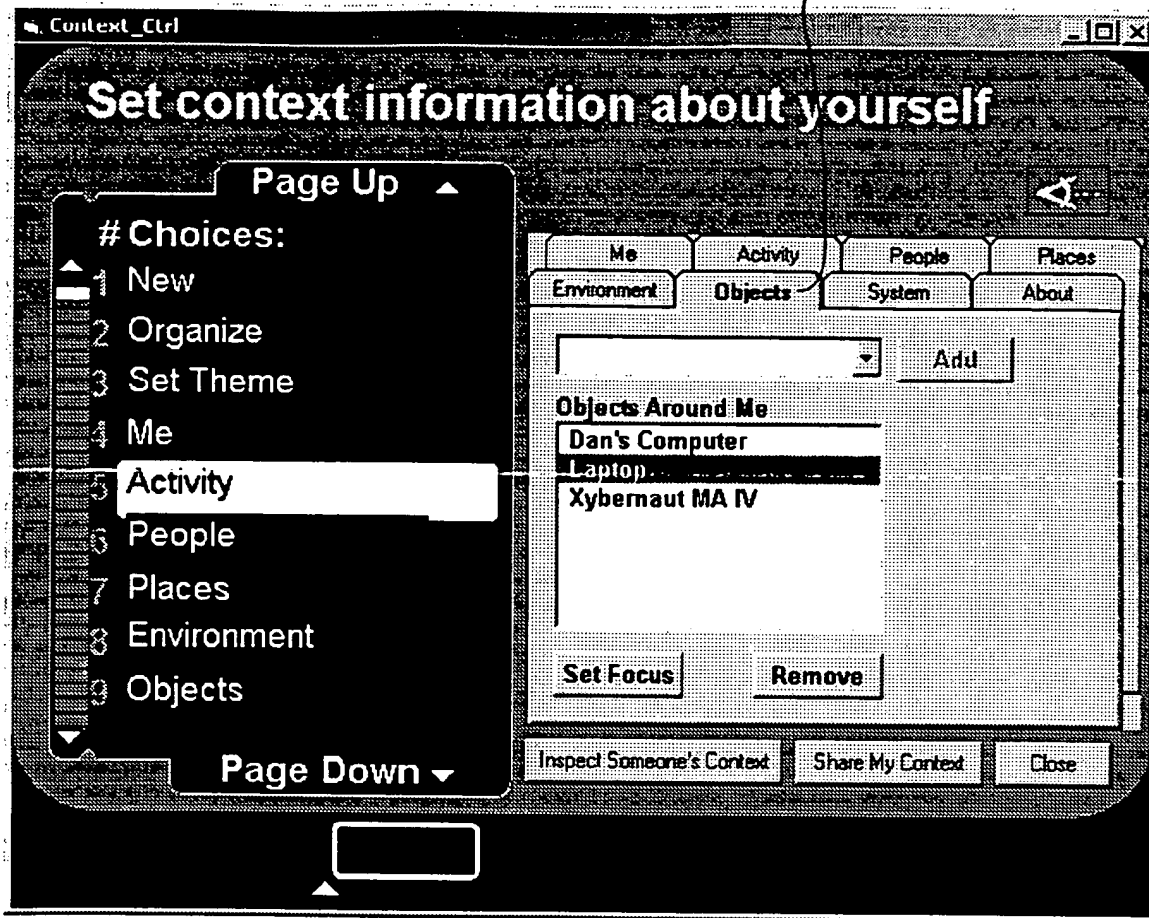


Fig. 12F

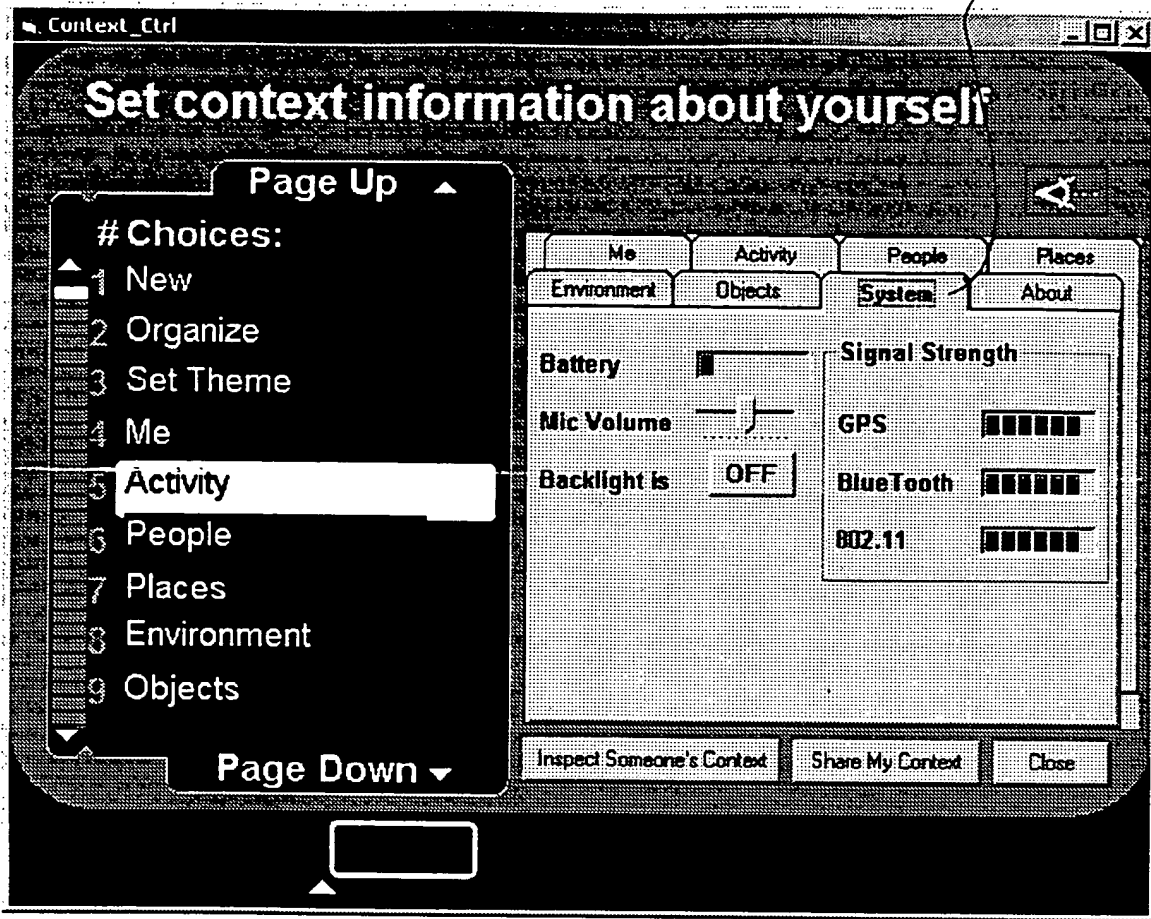


Fig. 12G

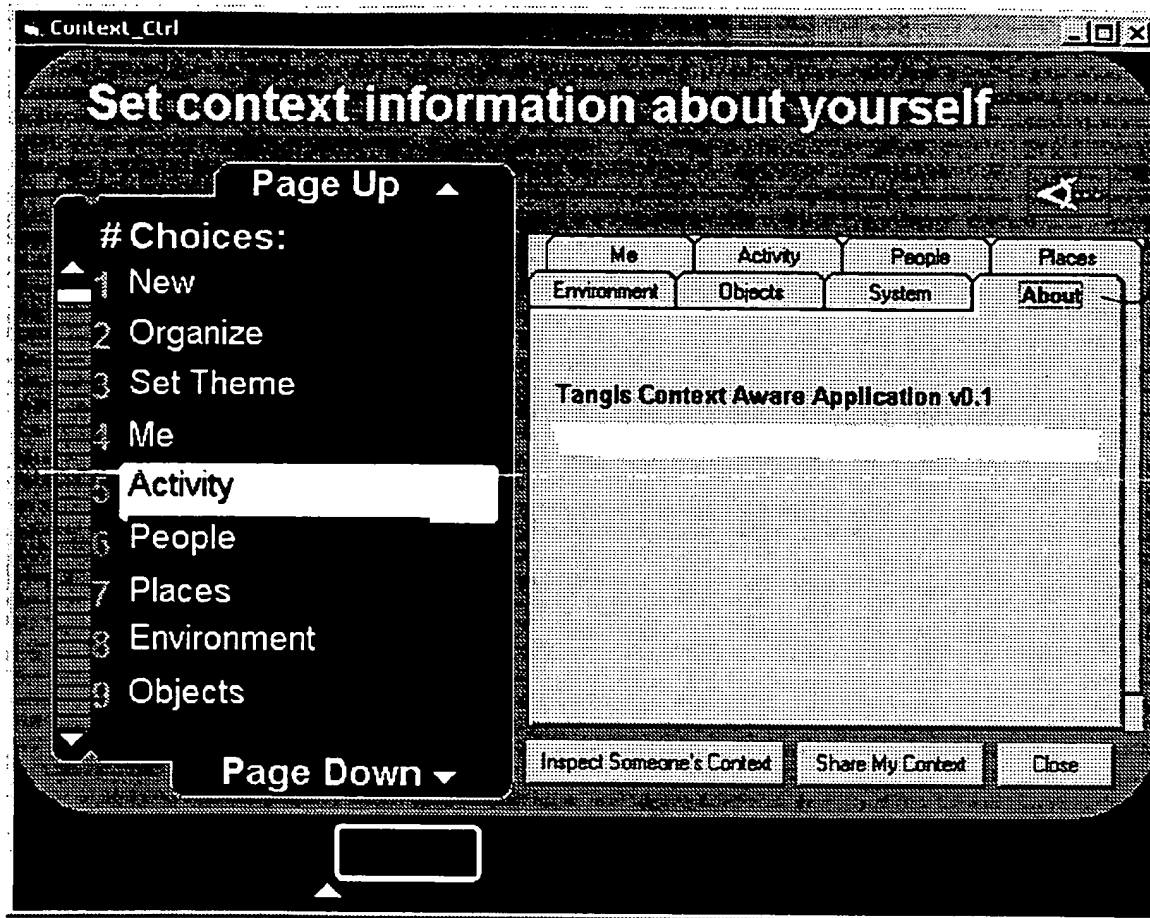


Fig. 12H

Example Theme Data Structure

1305	Name	Driving To Work
1310	Description	Intent Is To Organize Both Driving Info & Info About Work Arrival
1315	Security	Default: ****; Self: *****; ...
1320	Permission	Access: Self+Family+Friends+Source; Modification: Self; Copy: None; ...
1325	Privacy	Private
1330	Priority	Medium
1335	Group-ID	23
1340	Time-Active	Mon-Fri, 06:00-11:00
1345	Source	BCD Motor Company
1350	Theme-Content	"BCD Motor logo.gif"
1355	New-Attributes	DTW-BCD.driving-direction: (source = "BCD-DTW CS"); ...
1360	Theme-Matching	user.activity.driving = true (required); environment.local.time = 08:00-09:00 (optional); DTW-BCD.driving-direction = NOT "South" (required); ...
1365	Theme-Logic	IF <user.activity.driving> AND user.location.latitude > recent.user.location.latitude THEN DTW-BCD.driving-direction = "North"; IF DTW-BCD.driving-direction = "East" THEN Alert("You're Lost Again!!"); SET user.location[Access] = Family & Co-workers; ...
1370	Attribute-Set	<link>; ... <link>
		:

Attribute 1

Name	user.activity.driving
Value	True
Uncertainty	High
Timestamp	07:32 03/24/XX
Units	boolean
Access	Family
	:

...

Attribute N

Name	DTW-BCD.driving-direction
Value	West
Uncertainty	None
Timestamp	08:13 03/24/XX
Units	North, North by Northeast, ...
Access	Self
	:

Figure 13

Theme Server computing device 1400

Theme User computing device 1450

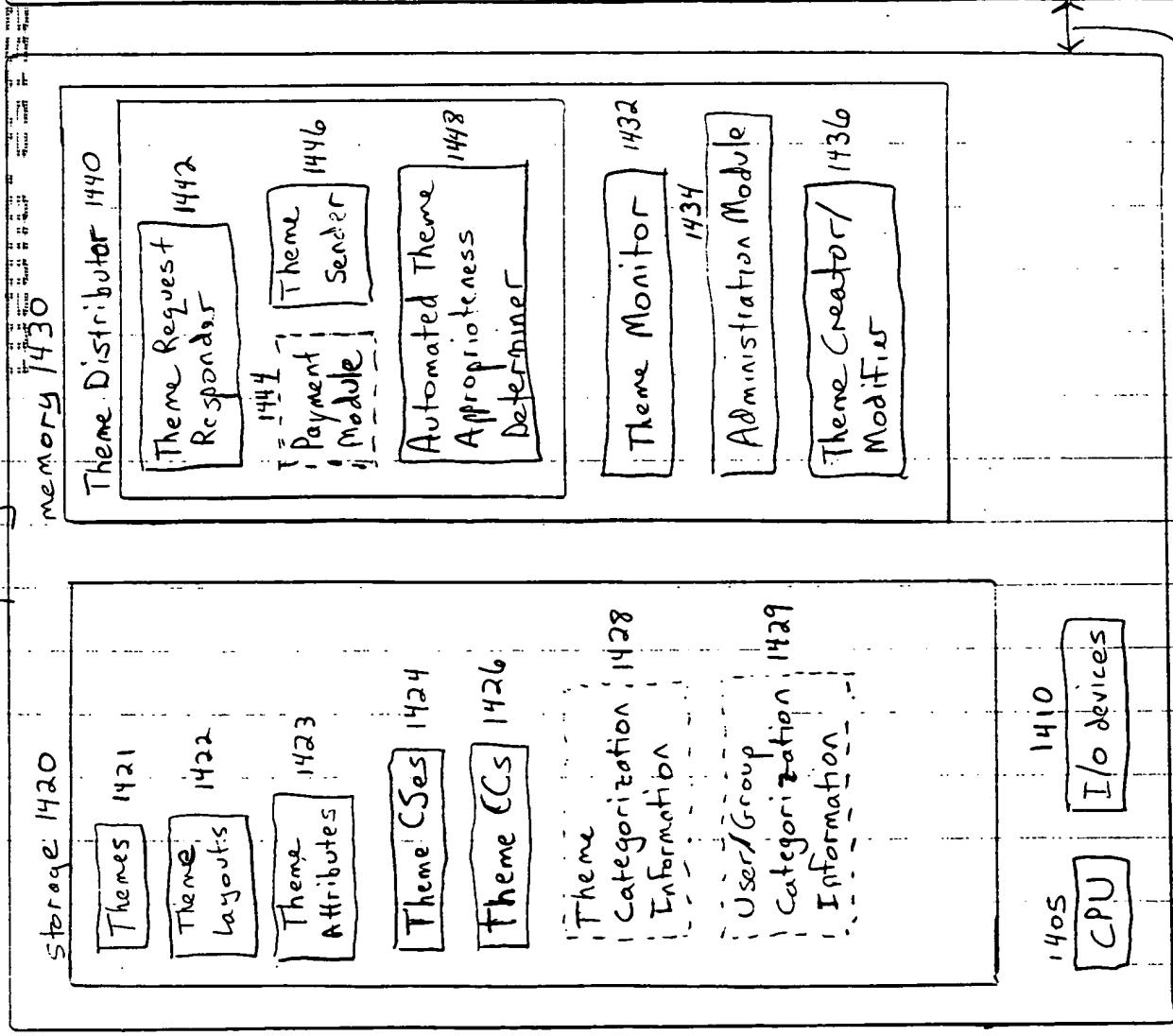


Fig. 14

network 1465

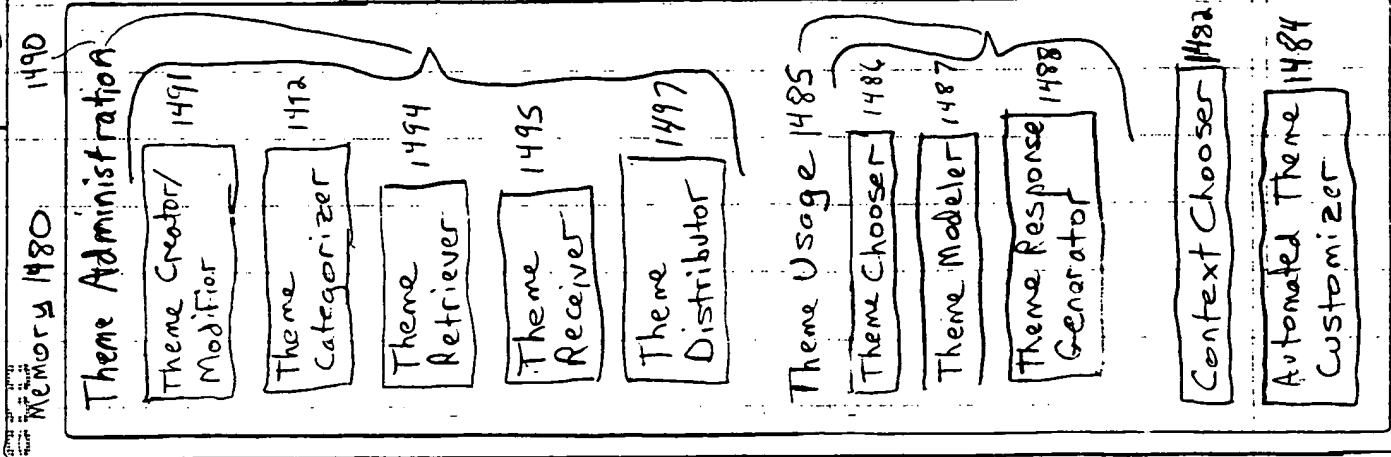


Fig. 15

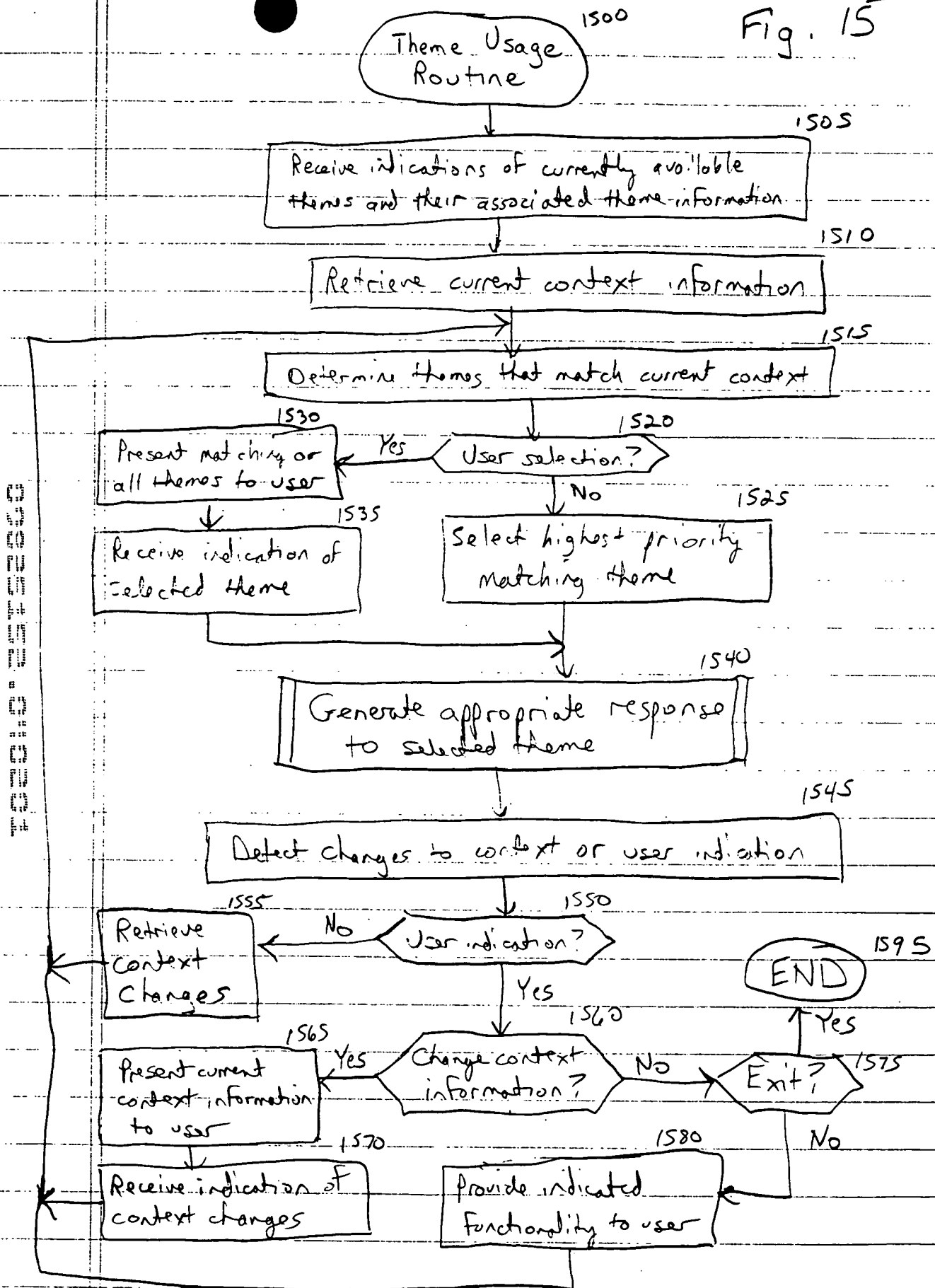
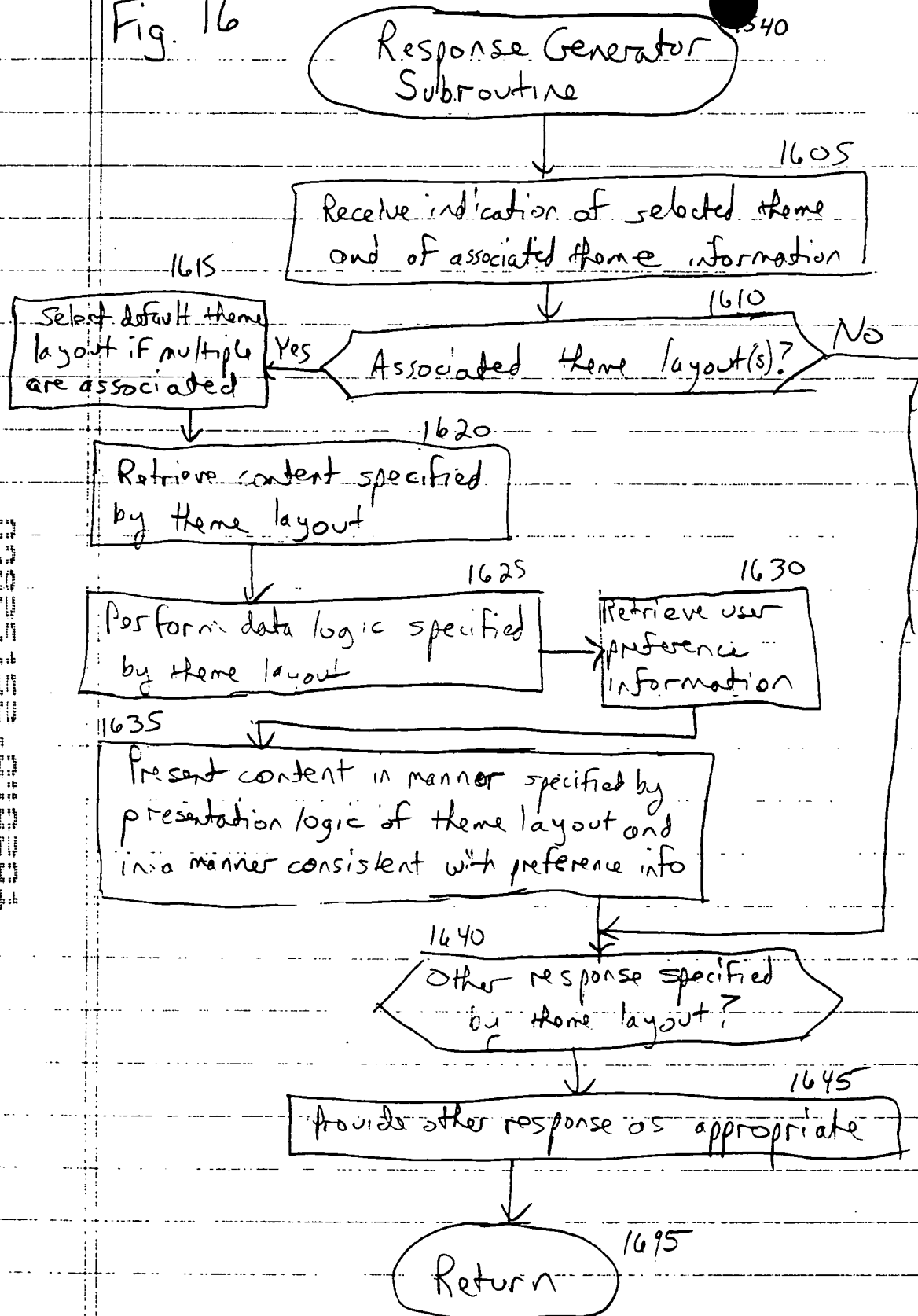


Fig. 16



1700

Fig. 17

Theme Creator/
Modifier Routine

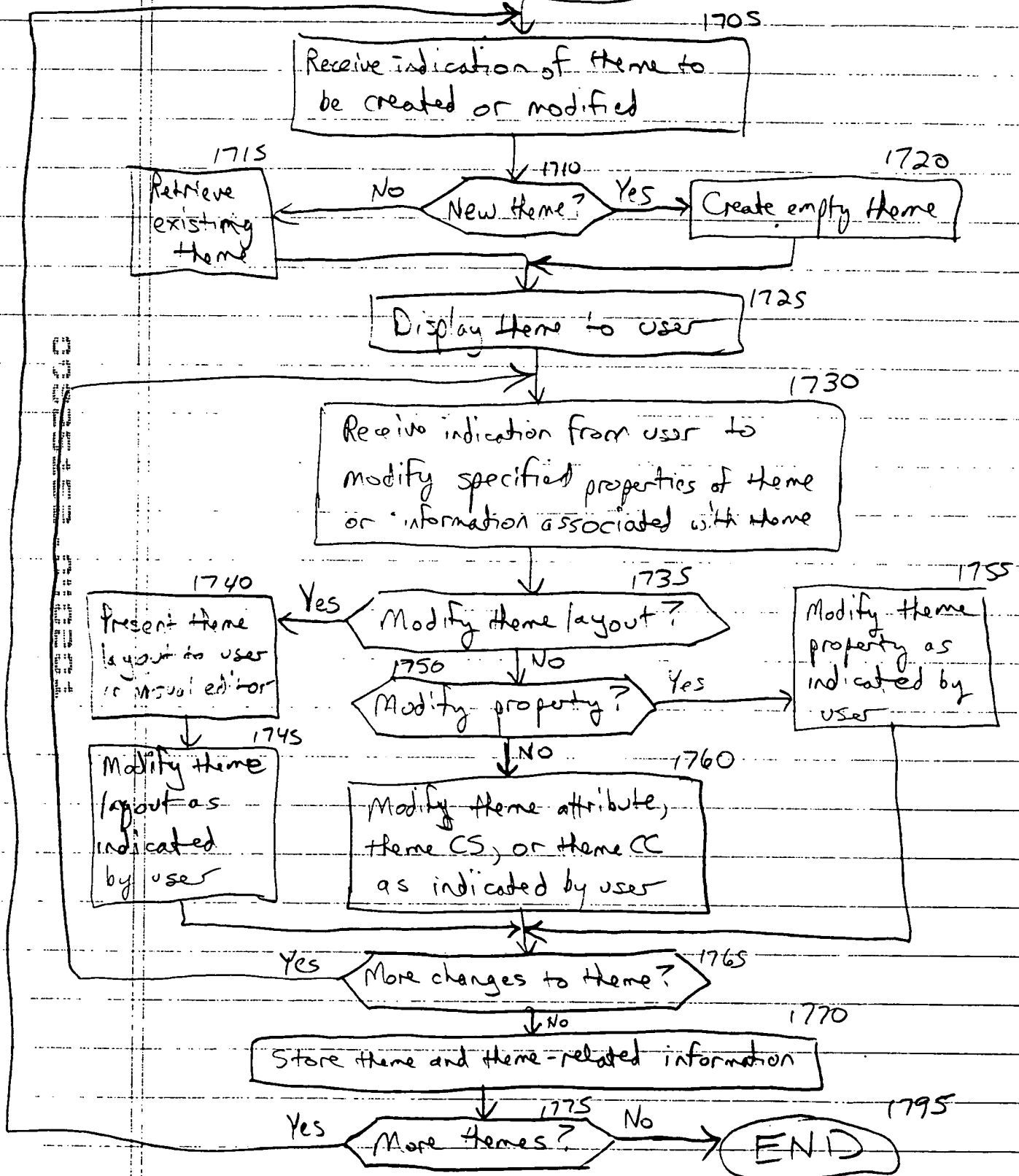
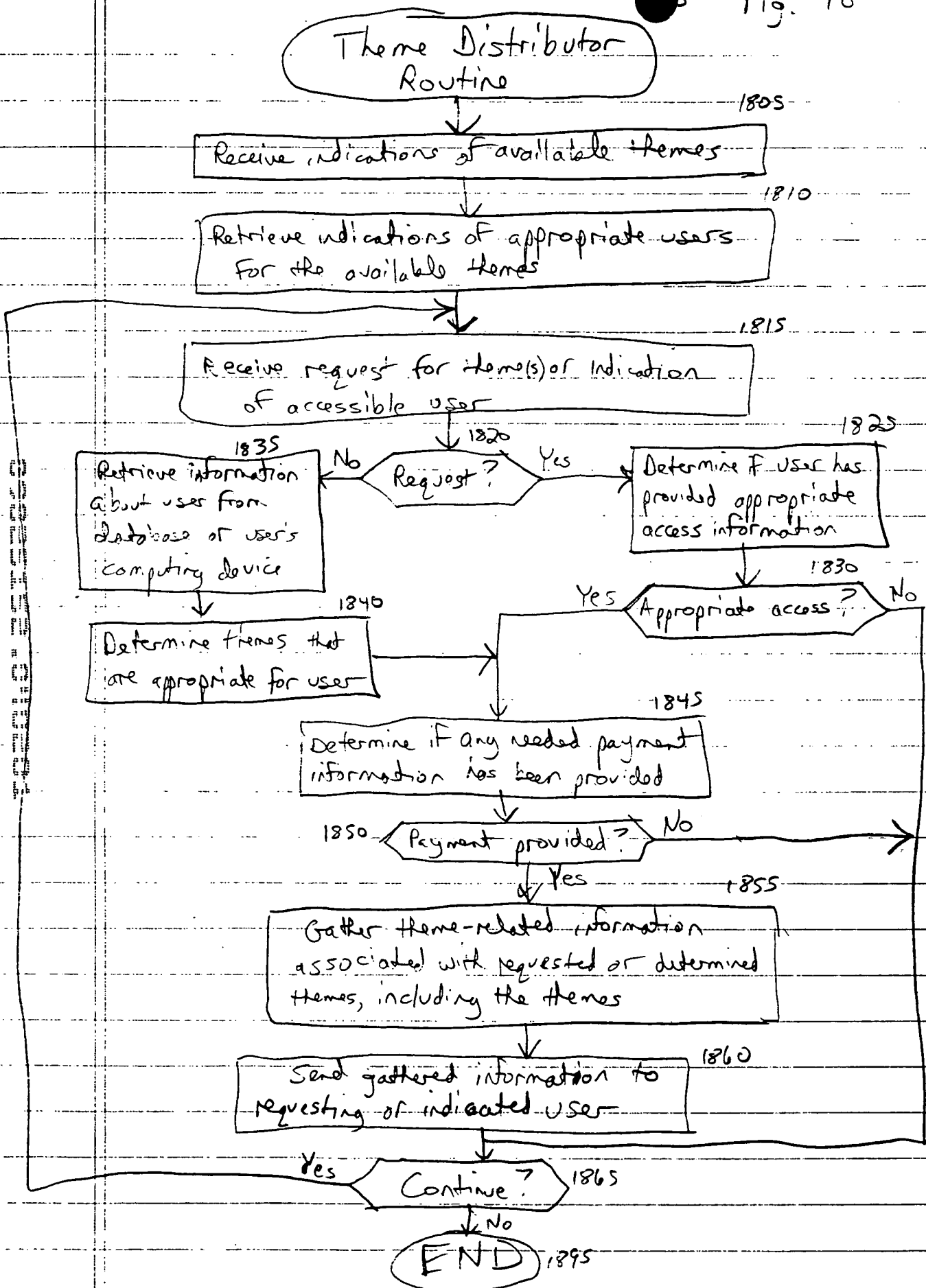


Fig. 18



Theme Receiver Routine

1905

Receive user request for theme or indication of sent theme

1915

Request?

No

Yes

1940

Receive indication of sent theme

Attempt to determine theme server that can provide requested theme

1920

No

Theme server found?

Yes

1925

Receive appropriate access information for theme and theme server, either from user or from storage

1930

Receive indication of payment mechanism if needed, either from user or from storage

1935

Send request for theme to theme server, including any access information and payment information

No

Payment information needed?

1945

Yes

1950

Send payment information

1955

Payment accepted?

No

1922

Indicate failure to user

Yes

1960

Receive theme and any associated theme-related information

1965

Store received information, and load for use if immediately useful

Continue?

1970

Yes

No

1995

END

200

Fig. 20

Automated Theme Customizer Routine

2005

Receive indications of available themes

2010

Repeatedly monitor user actions, including interactions with themes, modifications to themes, and explicit changes to the current theme or the current context

2015

Analyze monitored actions to determine patterns of actions

2020

Any patterns above relevance threshold?

Yes

2025

Retrieve user preference information

2030

Determine modifications to some or all themes that are consistent with patterns above the relevance threshold and with user preferences

2035

Do automated modification?

No

2050

Present suggested modifications to the user

Yes

2040

Modify themes as determined

2045

Notify user of modifications

2055

Receive indications of accepted modifications

2060

Modify themes as indicated

Yes

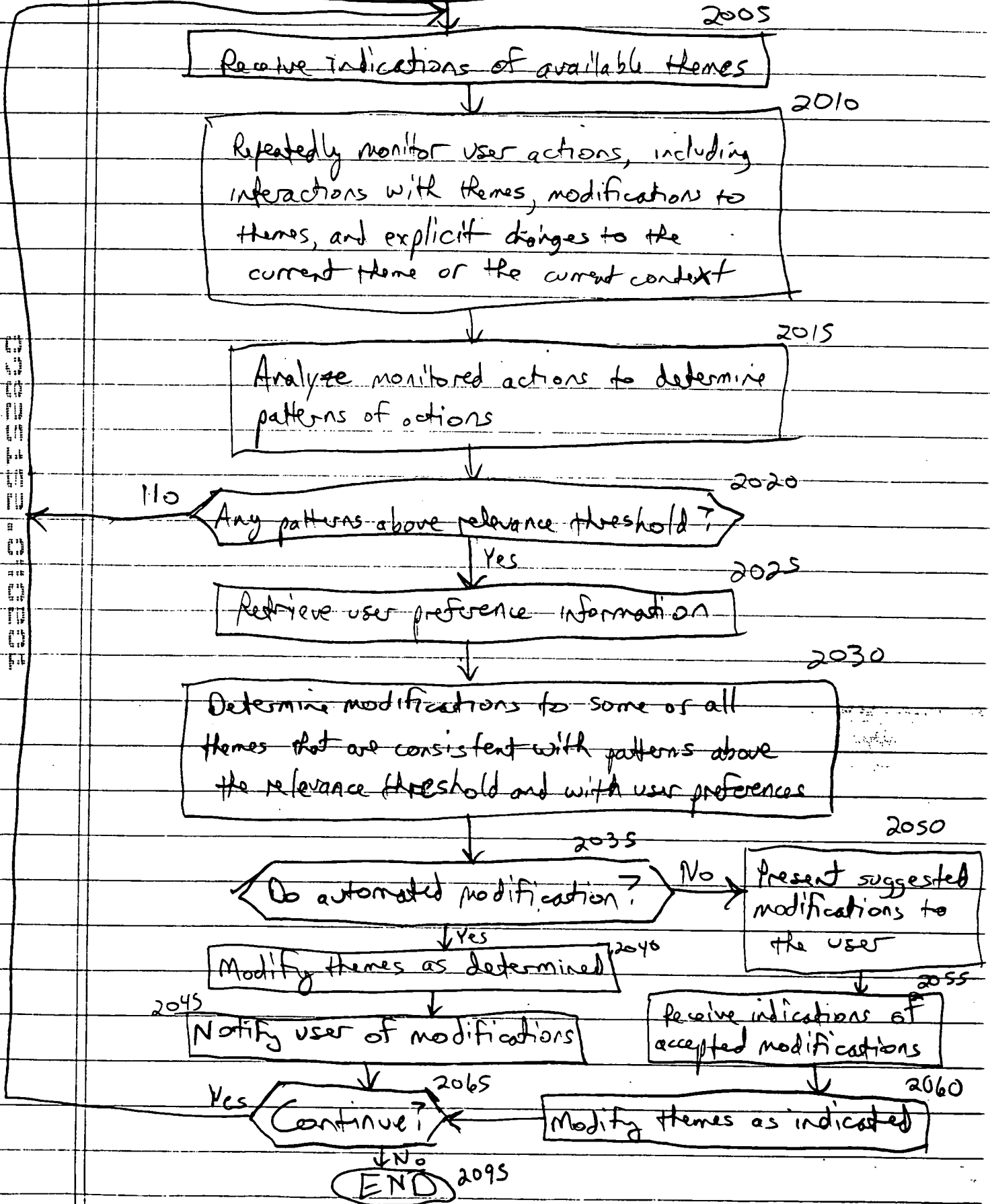
2065

Continue?

No

2095

END



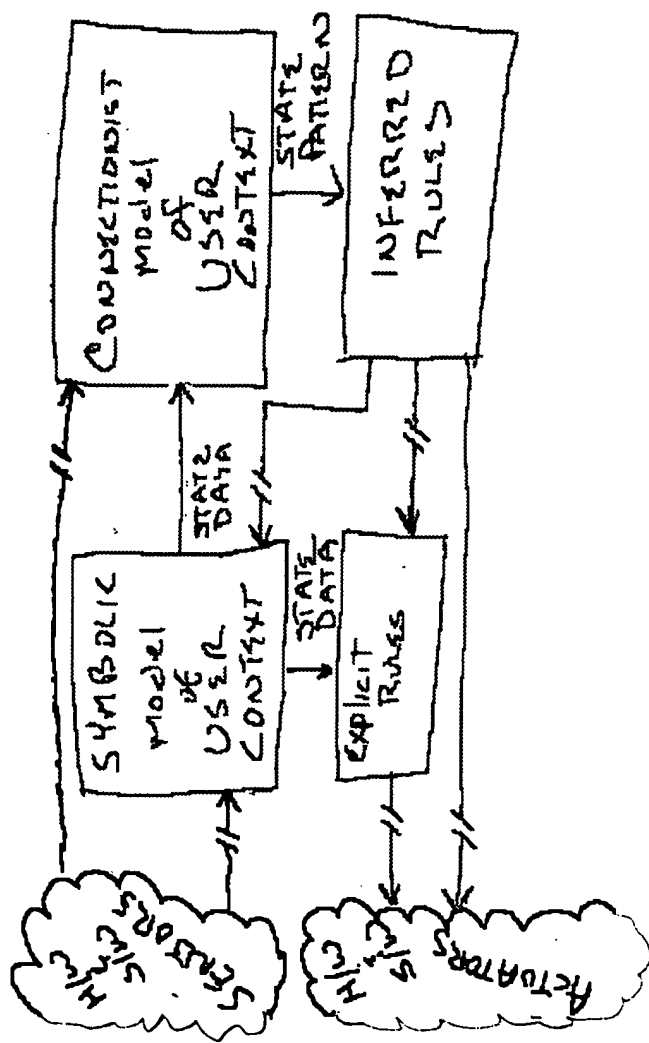


Figure 21

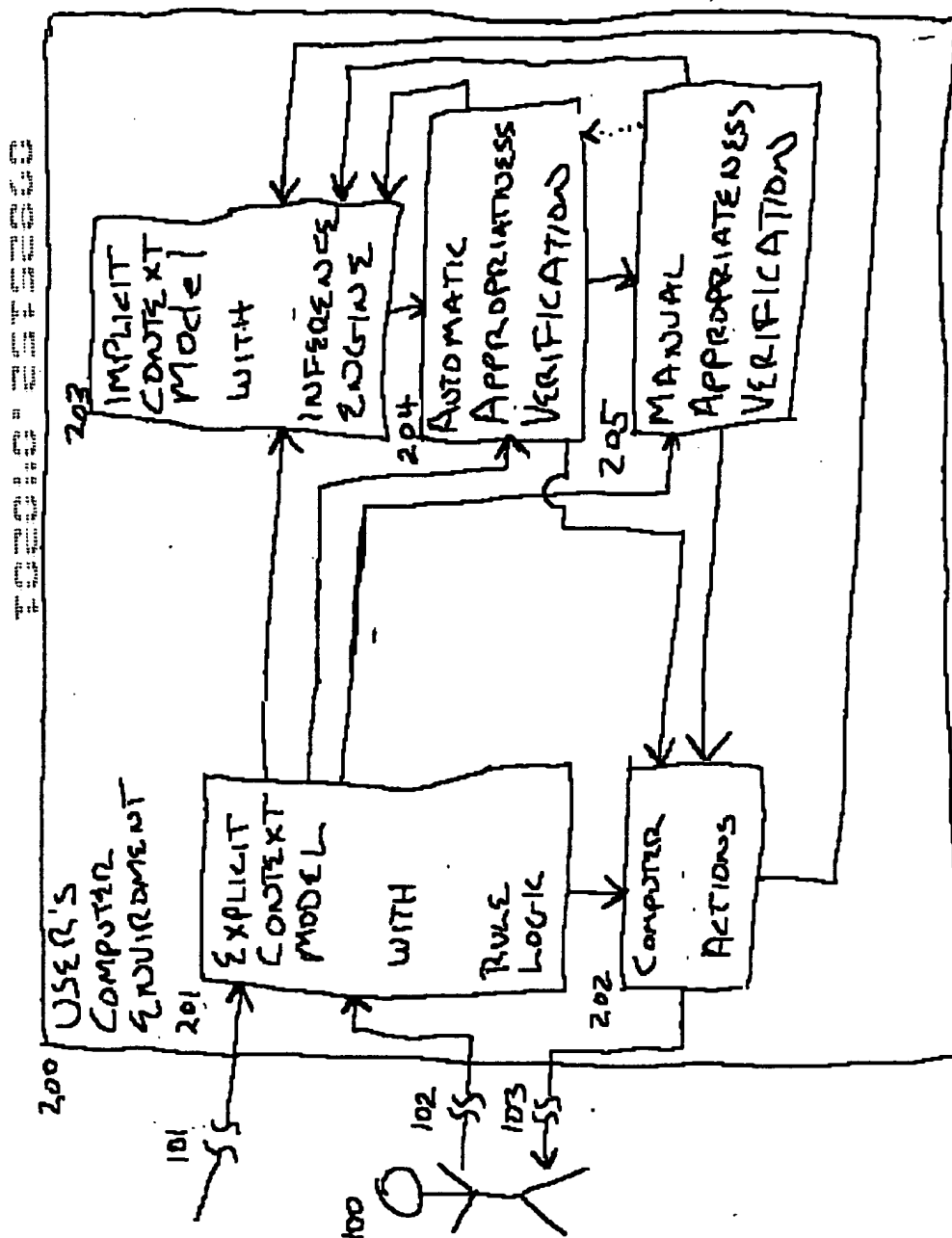


Figure 22

Figure 23

DATA STRUCTURE

Logic

REAL WORLD DATA

ABSTRACT WORLD

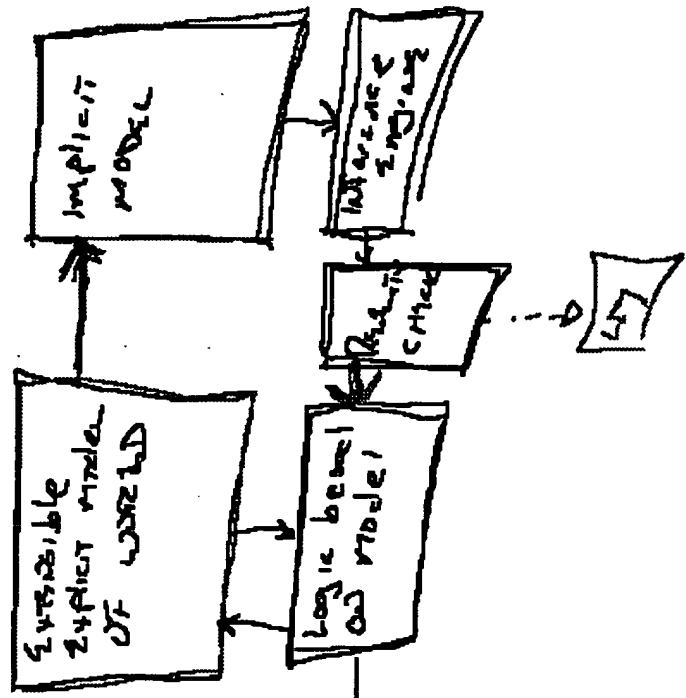


Figure 23

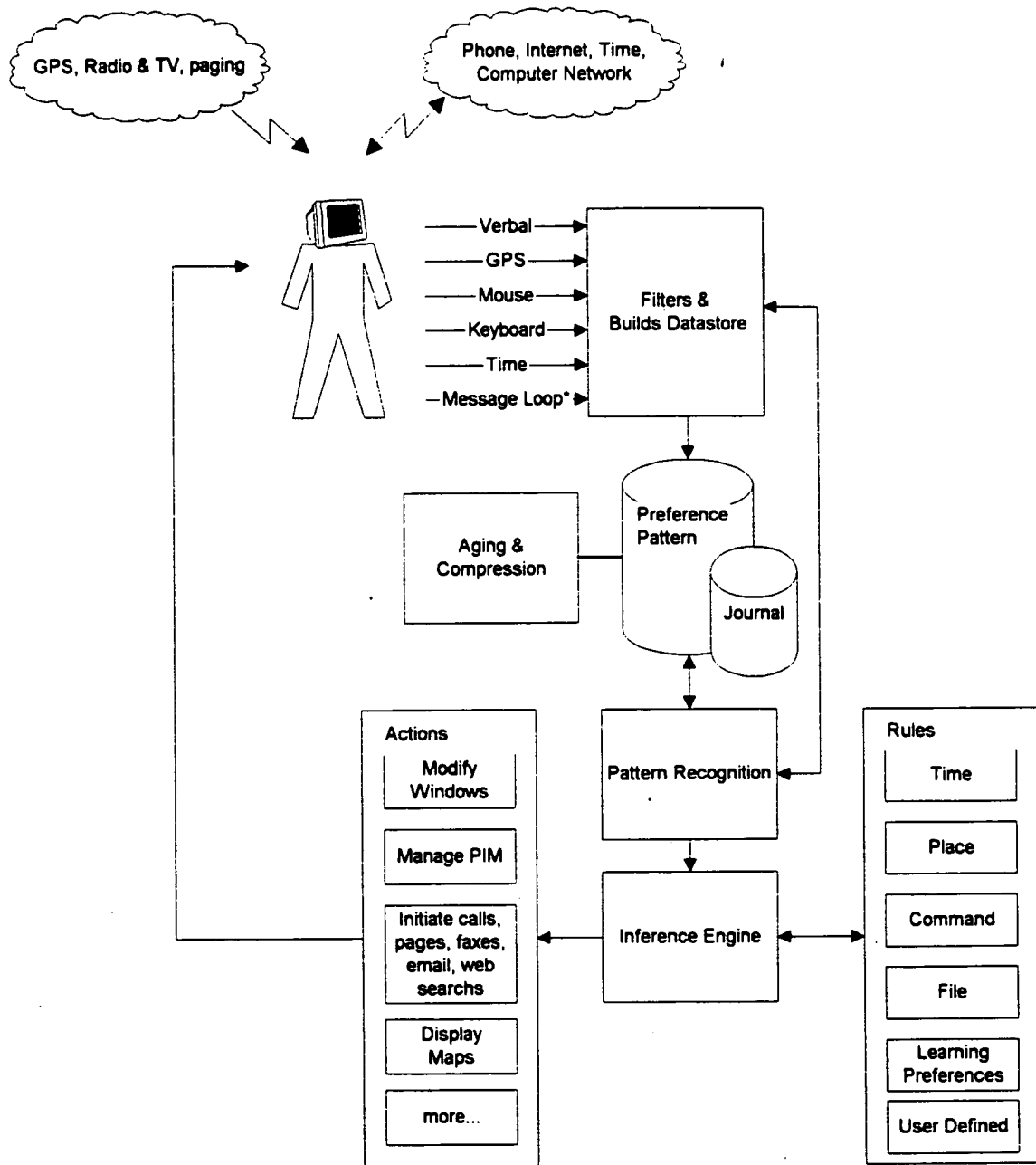


Fig. 24

2500

Fig. 25

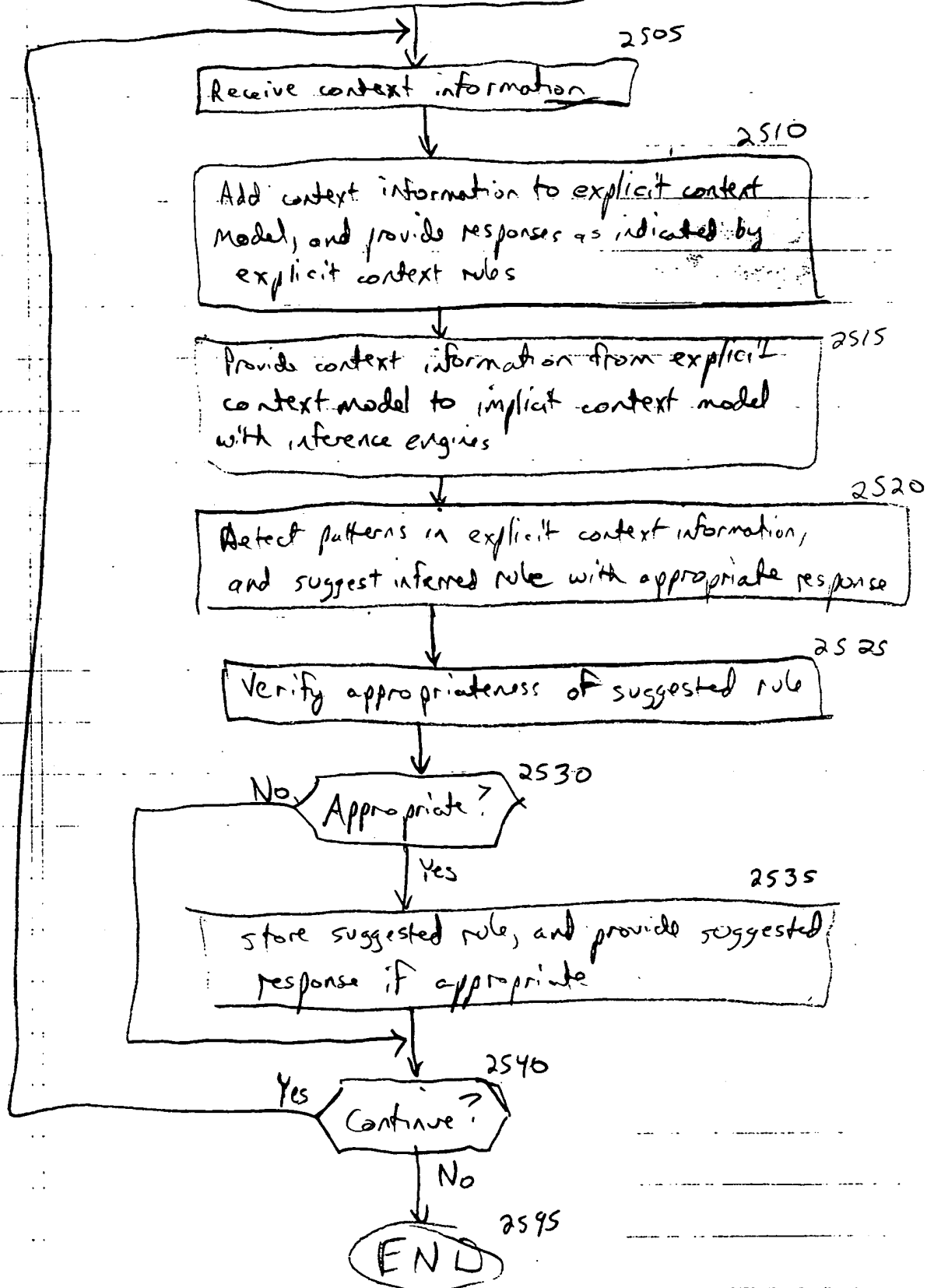


Fig. 26

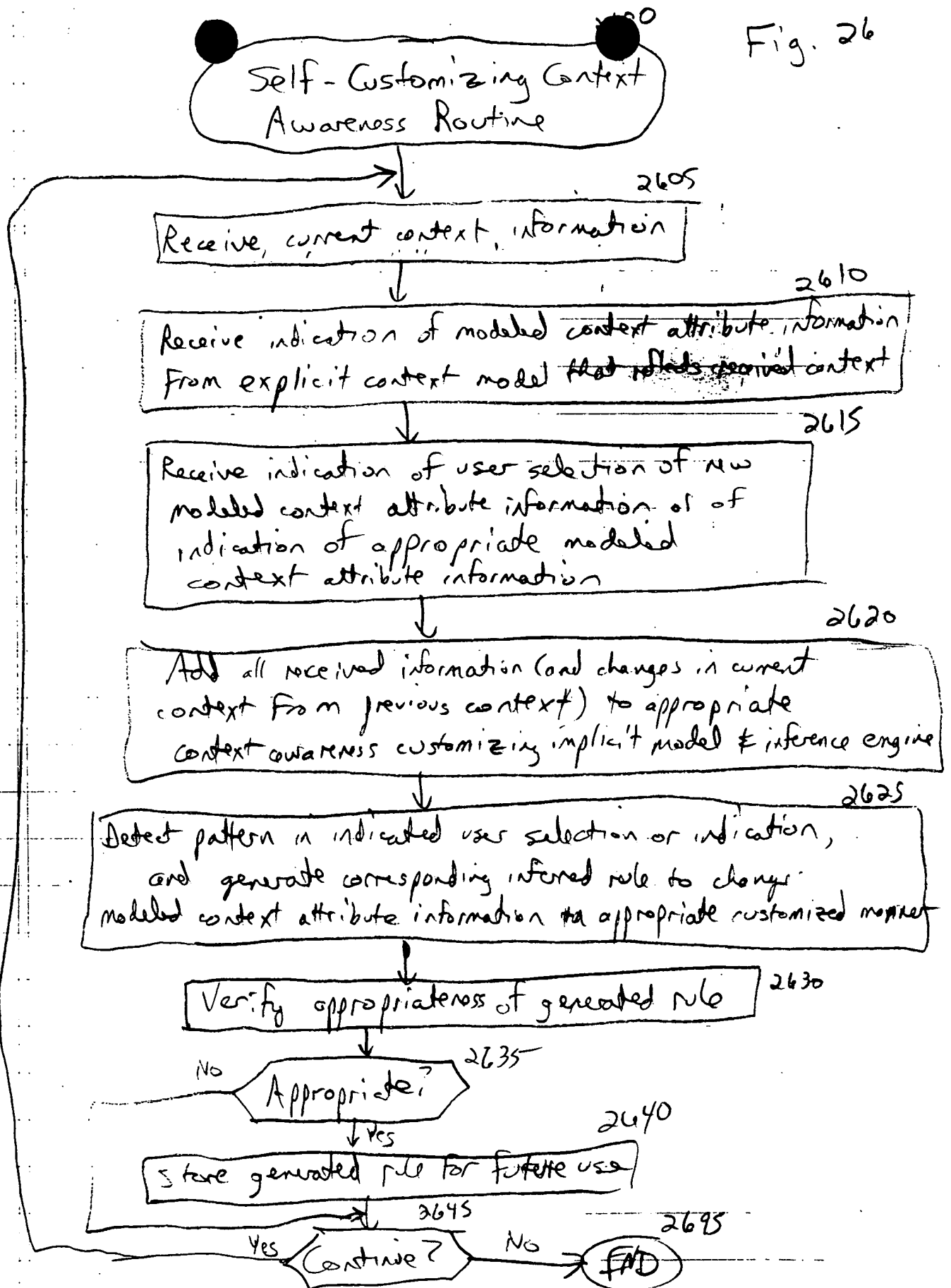
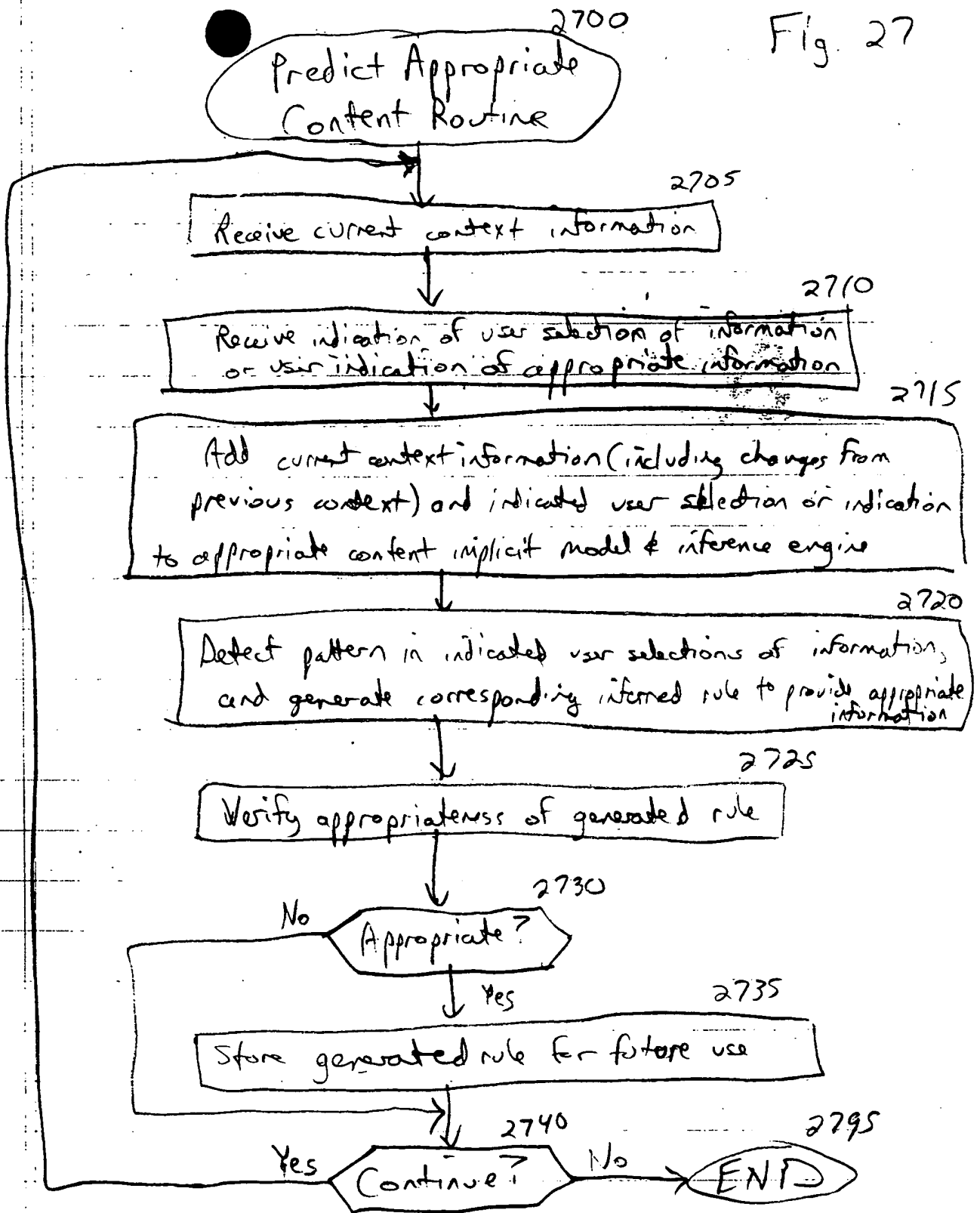


Fig. 27



2800
Self-Optimizing
UI Routine

Fig. 28

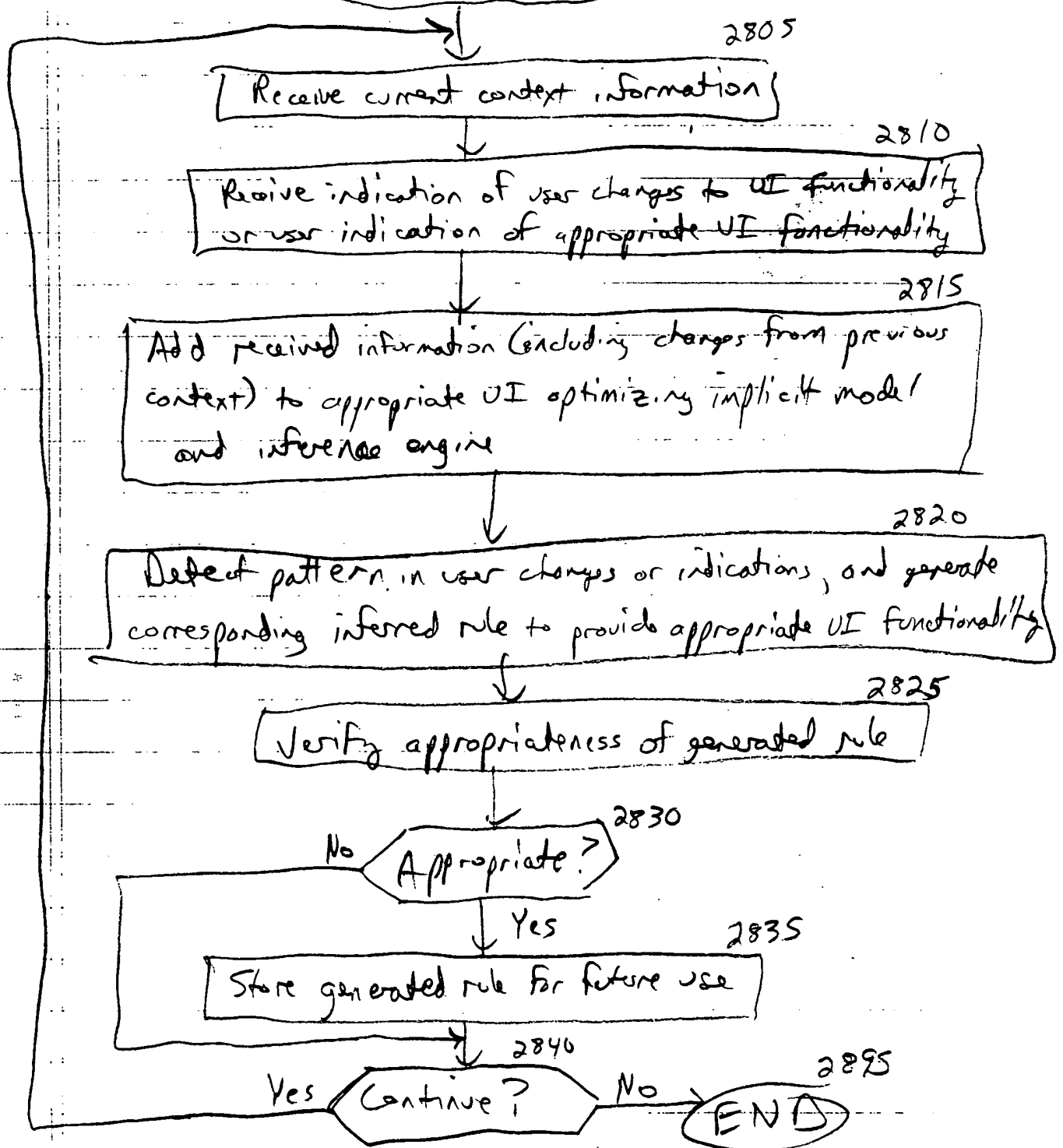
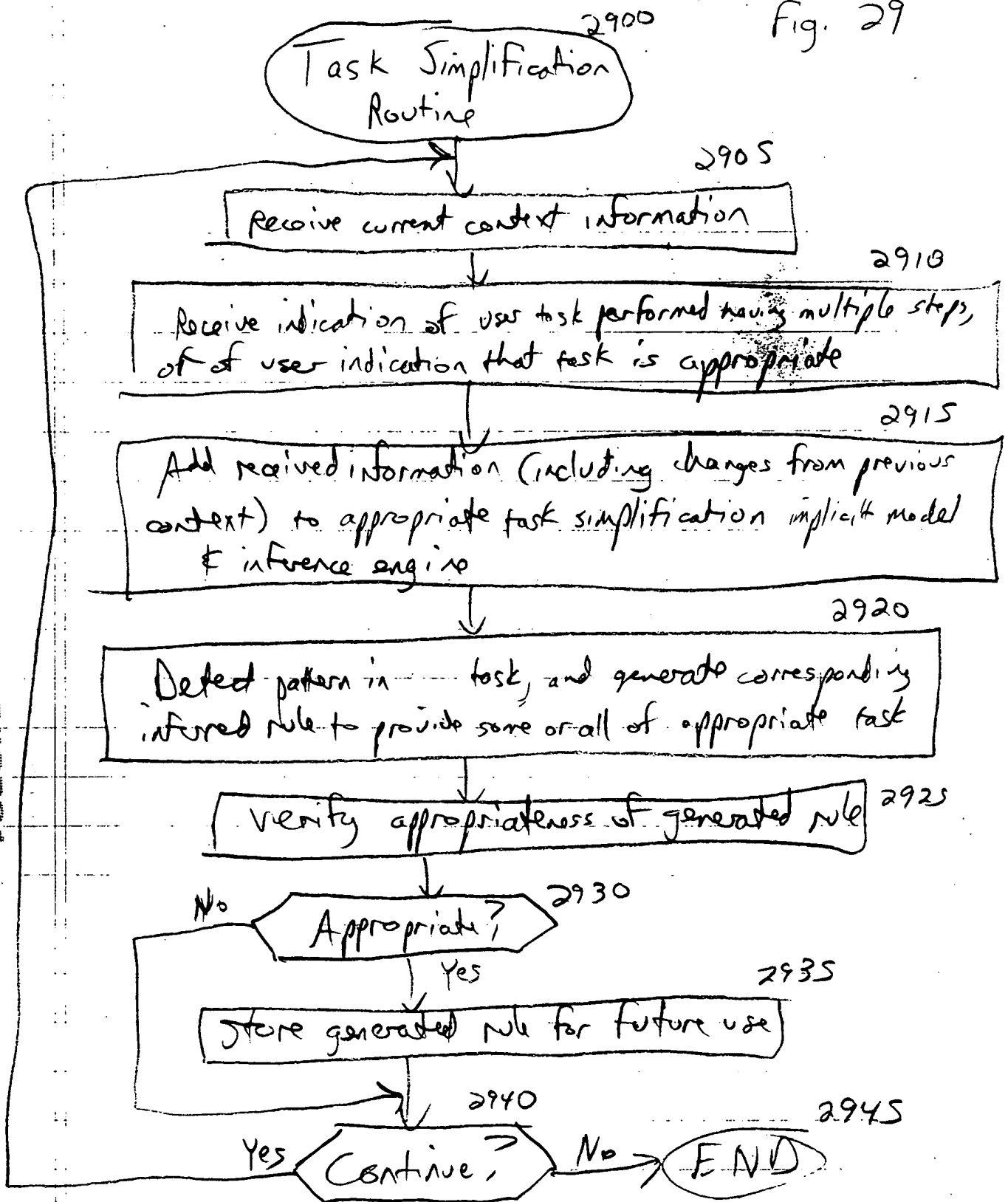


Fig. 29



Mentoring Routine

Fig. 30

